The association between emotional disorder and absence from school in children and young people

Submitted by Katie Finning to the University of Exeter
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I certify that all material in this thesis which is not my own work has been identified and that no material has previously been submitted and approved for the award of a degree by this or any other University.

Signature: ……..

Dedication

To everyone affected by chronic illness.

Acknowledgements

I was diagnosed with Lyme disease two months into my PhD, after many years of progressively poor health. Doing a PhD while continuing to be affected by substantial health issues has been one of the most challenging times of my life and, on reflection, I am really not sure how I have managed to see it through to completion. What I do know, however, is that I could not have done it without the support of some amazing people.

Firstly, to my supervisors. What a dream-team! Prof Tamsin Ford, you have been the most incredible supervisor, mentor and role model, and I am certain that this thesis would not have been completed had I not had such a supportive lead supervisor. I feel truly privileged to have worked with you. Dr Obi Ukoumunne, you have been so incredibly generous with your time throughout my PhD. Your patience, enthusiasm and great sense of humour made statistics thoroughly enjoyable, and I always looked forward to our meetings! Dr Darren Moore, your breadth and depth of knowledge never ceases to amaze me, and my thesis is infinitely stronger as a result of your input. I look forward to continued collaboration with you all.

Thank you to my family, colleagues and friends, especially those who have shown great patience and understanding to the limitations of having a friend with chronic illness. You know who you are. To the Exeter yoga community, where I feel accepted, supported and at home. Thank you for the regular reminders that life is bigger than me, my health and my PhD!

To James, thank you for your unwavering love, support and kindness. I am so grateful to have you by my side and truly cannot imagine having been through the last three years without you. Finally, to my parents, who show me unconditional love and who have always taught me that no dream is out of reach; I will never be able to express enough gratitude for all that you do.

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Abstract

Anxiety and depressive disorders ("emotional disorders") are common and impairing mental health conditions in children and young people (CYP), and they may be associated with absence from school. In this thesis I explore the association between emotional disorder and school absence through four original research studies. Firstly, a systematic review (Study One) is presented that evaluates the existing evidence for an association between emotional disorder and poor school attendance. This is followed by two studies that investigate cross-sectional (Study Two) and longitudinal bi-directional (Study Three) relationships between emotional disorder and school absence using data from a large population survey of CYP in the UK. Finally, a qualitative study (Study Four) is presented that explores educational practitioners' beliefs about risk factors for attendance problems.

Findings from the systematic review (Study One) suggested that emotional disorders are associated with higher levels of various "types" of absence. However, the ability to derive clear conclusions was undermined by limitations of the included studies and methodological heterogeneity between them, particularly in terms of how school attendance was measured. The quantitative cross-sectional study (Study Two) revealed strong relationships between several measures of emotional disorder and total, authorised and unauthorised school absence. The strongest relationships were observed for depression, particularly in relation to unauthorised absence. The longitudinal study (Study Three) demonstrated that depression and teacher-reported emotional difficulties predict unauthorised absence three years later, while authorised absence predicts teacher- and parent-reported emotional difficulties three years later. The qualitative study (Study Four) demonstrated that although school staff acknowledge mental health problems as a risk factor for attendance problems, they focus on anxiety rather than other mental health conditions, including depression.

Taken together, the findings from this thesis provide evidence for a strong association between emotional disorder and school absence, which may be causal and bi-directional in nature. Implications of the research for clinical and educational practice, as well as for future research in this field, are discussed.

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Author's Declaration

This thesis includes three chapters that comprise papers published in, or submitted to, peer reviewed academic journals. These are Chapters Four (quantitative cross-sectional study), Five (quantitative bi-directional study) and Six (qualitative study). Two additional papers published from the systematic review (which is presented in its original unpublished form in Chapter Three) are presented in Appendices Three and Four. The contribution that I personally made to each of these papers, and the contribution made by each co-author, is described below.

Quantitative studies: presented in Chapters Four and Five

I developed the idea for the studies, produced data analysis plans, obtained ethical approval, accessed and cleaned the data, conducted data analyses and produced the first draft of manuscripts for publication. All co-authors contributed to revision of manuscripts for publication, alongside the following additional roles:

- Tamsin Ford: Advised on study conception and design.
- Darren Moore: Advised on study conception and design.
- Obioha Ukoummune: Advised on study conception and design, provided advice on the analysis plans, and provided statistical advice and support.

Qualitative study: presented in Chapter Six

The qualitative study presented in Chapter Six was a secondary analysis of existing qualitative data. Further details of the process by which this occurred are provided in Chapter Two (Thesis Overview). I proposed the idea for the secondary analysis, conducted data analysis, and produced the first draft of the manuscript for publication. All co-authors contributed to revision of manuscripts for publication, alongside the following additional roles:

- Polly Waite: Conceived the idea for the initial qualitative study (reported in Appendix Eight), supervised the collection of data, and supervised data analysis.

- Kate Harvey: Conceived the idea for the initial qualitative study (reported in Appendix Eight), supervised the collection of data, and supervised data analysis.
- Darren Moore: Advised on study conception and design.
- Becky Davis: Conducted focus groups and transcribed data.
- Tamsin Ford: Advised on study conception and design.

Systematic review: papers presented in Appendices Three & Four

I developed the idea for the study, produced and published the protocol, conducted searches, screened studies, extracted data, performed quality assessment, synthesised results and produced the first draft of manuscripts for publication. All co-authors contributed to revision of manuscripts for publication, alongside the following additional roles:

- Obioha Ukoumunne: Advised on study conception and design, and provided statistical advice and support.
- Tamsin Ford: Advised on study conception and design, and provided methodological guidance.
- Emilia Danielsson-Waters: Acted as independent reviewer for the screening of identified studies.
- Liz Shaw, Ingrid Romero De Jager and Lauren Stentiford: Acted as independent reviewers for data extraction and quality assessment.
- Darren Moore: Advised on study conception and design, acted as independent reviewer for data extraction and quality assessment, and provided methodological guidance.

Abbreviations

ADHD	Attention Deficit Hyperactivity Disorder
BCAMHS	British Child and Adolescent Mental Health Survey
CAMHS	Child and Adolescent Mental Health Service
CBT	Cognitive Behavioural Therapy
CI	Confidence Interval
CYP	Children and Young People
d	Cohen's *d* (standardised mean difference)
DAWBA	Development and Wellbeing Assessment
DSM	Diagnostic and Statistical Manual of Mental Disorders
GP	General Practitioner
ICD	International Classification of Diseases
INSA	International Network for School Attendance
IRR	Incident Rate Ratio
MCS	Millennium Cohort Study
MHCYP	Survey of the Mental Health of Children and Young People in England 2017
NHS	National Health Service
NICE	National Institute for Health and Care Excellence
NOS	Newcastle-Ottawa Scale
OR	Odds Ratio
PTSD	Post-Traumatic Stress Disorder
r	Pearson's r (correlation coefficient)
SD	Standard Deviation
SDQ	Strengths and Difficulties Questionnaire
SE	Standard Error

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Chapter One: Introduction

This thesis presents an investigation of the association between emotional disorder and absence from school in children and young people (CYP). This chapter provides an introduction to the thesis. Because the thesis is primarily written from a health perspective, and because my own previous academic and research experience has been in the field of mental health, rather than education, this chapter starts by providing an overview of emotional disorders, including their symptoms, diagnosis, prevalence, impact, and interventions. It then moves on to discuss the role of schools in supporting the mental health of CYP, followed by an overview of school absence and its relation to emotional disorder. The chapter finishes with a brief discussion of the terminology used in the thesis as well as the philosophy and assumptions underpinning the thesis.

1.1 Emotional disorder

Emotional disorders refer to anxiety and depressive disorders. They are among the most prevalent mental health conditions experienced by CYP, with anxiety disorders affecting approximately 7%, and depressive disorders 2% to 3%, of this population worldwide (Ghandour et al., 2019; Polanczyk et al., 2015; Vizard et al., 2018). While emotional *disorders* refer to difficulties that are severe enough to meet diagnostic thresholds, there are also a substantial number of CYP who experience subthreshold symptoms of anxiety and depression. These difficulties are often referred to as emotional difficulties/symptoms/problems or internalising difficulties/symptoms/problems. Estimates suggest that 32% of adolescents experience subthreshold anxiety, and 29% experience subthreshold depression (Balázs et al., 2013). A more detailed discussion of the terminology used to refer to emotional disorder throughout this thesis is provided in Section 1.5.1.

1.1.1 Symptoms and diagnosis of emotional disorder

Fear and anxiety play important roles in human functioning, enabling awareness of danger and preparing the individual to avoid threat. Fear refers to “a state elicited by an immediately present specific object or situation that is capable of harm or danger”, while anxiety “resembles fear but occurs in situations that are not acutely dangerous, but which are experienced as such” (Pine and Klein,

2015, p822). While fear and anxiety are part of the normal human experience, anxiety *disorders* refer to anxiety that occurs more frequently and for a longer period of time compared to the usual fears that most people experience, and which interferes with normal functioning (Creswell and Waite, 2016). Across cultures, the content of normal fears and worries typically follows a developmental course, with fears of animals, specific objects, and separation from caregivers usually beginning in early childhood, and more complex worries such as being negatively evaluated by others predominating during adolescence. The typical age of onset of anxiety disorders tends to mimic these developmental fluctuations in normal fears and anxieties (Creswell and Waite, 2016; Pine and Klein, 2015). Depressive disorders are characterised by persistent impairing sadness, anhedonia (loss of interest or pleasure), or irritability that is unresponsive to pleasurable activities, interactions, and attention from others (Brent and Maalouf, 2015). Again, while feeling sad or irritable is a normal part of the human experience, depressive *disorders* are deemed to occur when low mood becomes enduring; is associated with functional impairment at home, school/work and in relationships; and is accompanied by other symptoms, which are described in further detail below (Hussain et al., 2018).

Tables 1 and 2 provide summaries of the clinical characteristics of the most common emotional disorders experienced by CYP, according to the International Classification of Diseases, 10th Revision (ICD-10; World Health Organization, 2016a) and the Diagnostic and Statistical Manual of Mental Disorders Version 5 (DSM-5; American Psychiatric Association, 2013). Obsessive Compulsive Disorder (OCD) and Post-Traumatic Stress Disorder (PTSD) were included as anxiety disorders in previous versions of DSM, but are classified elsewhere in both DSM-5 (American Psychiatric Association, 2013) and ICD-10 (World Health Organization, 2016a). As these two disorders were included as anxiety disorders in the datasets utilised for Chapters Four and Five of this thesis, as well as by some studies included in the systematic review presented in Chapter Three, they are included here for completeness. Body Dysmorphic Disorder is recognised in DSM-5 but is not included in ICD-10

(although it has been proposed for inclusion in ICD-11; (Veale and Matsunaga, 2014)), hence it is included in Table 2 but not Table 1.

Table 1. Summary of clinical characteristics of common emotional disorders experienced by children and young people, as described in the International Classification of Diseases, 10th Revision (ICD-10)

Emotional Disorder	Clinical Characteristics
Depressive disorders	
Major depressive episode	Lowering of mood, reduction of energy, and decrease in activity. Capacity for enjoyment, interest, and concentration is reduced. Marked tiredness even after minimum effort is common. Sleep usually disturbed; appetite diminished. Self-esteem and self-confidence almost always reduced; guilt or worthlessness often present. Lowered mood varies little from day to day, is unresponsive to circumstances and may be accompanied by so-called “somatic” symptoms.
Other depressive episode	Atypical depression; depression not-otherwise-specified.
Anxiety disorders	
Agoraphobia	Fears of leaving home, entering shops, crowds, or public places, or travelling alone in trains, buses, or planes. Panic disorder is a frequent feature. Depressive and obsessional symptoms and social phobias also commonly present. Avoidance of the phobic situation often prominent.
Generalised anxiety disorder	Anxiety that is generalised and persistent but not restricted to any particular environmental circumstances. Symptoms are variable but include nervousness, trembling, muscular tensions, sweating, light-headedness, palpitations, and dizziness. Fears that the patient or a relative will shortly become ill or have an accident are often expressed.
Obsessive-compulsive disorder	Recurrent obsessional thoughts or compulsive acts. Obsessional thoughts are ideas, images, or impulses that enter the patient’s mind again and again; they are distressing and the patient tries to resist them. Compulsive acts are stereotyped behaviours that are repeated again and again. Their function is to prevent some unlikely event, often involving harm to or caused by the patient, which he or she fears might otherwise occur. Anxiety is almost invariably present.
Panic disorder	Recurrent attacks of severe anxiety (panic), not restricted to any particular situation and therefore unpredictable. Symptoms include sudden onset of palpitations, chest pain, choking sensations, dizziness, and feelings of unreality. Often a secondary fear of dying, losing control, or going mad. Panic disorder should not be given as main diagnosis if patient has a depressive disorder at the time the attacks start.

Post-traumatic stress disorder	Delayed or protracted response to a stressful event or situation of an exceptionally threatening nature. Typical features include repeated reliving of the trauma in intrusive memories ("flashbacks"), dreams, or nightmares; a sense of "numbness"; detachment from others; unresponsiveness to surroundings; anhedonia; and avoidance of activities and situations reminiscent of the trauma. There is usually a state of autonomic hyperarousal with hypervigilance, enhanced startle reaction, and insomnia.
Separation anxiety disorder	Fear of separation constitutes the focus of the anxiety, which arose during the early years of childhood. It is of a degree (severity) that is statistically unusual and is associated with significant problems in social functioning.
Social phobia	Fear of scrutiny by others leading to avoidance of social situations. Usually associated with low self-esteem and fear of criticism. May present as complaint of blushing, hand tremor, or nausea. In children: wariness of strangers and anxiety when encountering new, strange or socially threatening situations.
Specific phobia	Phobias restricted to specific situations such as particular animals, heights, thunder, darkness, flying, or closed spaces. Though the triggering situation is discrete, contact can evoke panic as in agoraphobia or social disorder. In children: fears in childhood that show a marked developmental phase specificity and arise to some extent in a majority of children, but that are abnormal in degree.
Other anxiety disorder	Anxiety disorder not-otherwise-specified.

Table 2. Summary of clinical characteristics of common emotional disorders experienced by children and young people, as described in the Diagnostic and Statistical Manual of Mental Disorders Version 5 (DSM-5)

Emotional Disorder	Clinical Characteristics
Depressive disorders	
Major depressive disorder	Five or more of the following symptoms present during the same two-week period, representing a change from previous functioning: depressed mood, loss of interest or pleasure, weight loss/gain or decreased/increased appetite, insomnia or hypersomnia, agitation or retardation, fatigue or loss of energy, feelings of worthlessness or excessive guilt, diminished ability to concentrate, thoughts of death or suicide. At least one symptom must be depressed mood or loss of interest/pleasure.
Other depressive disorder	Applies to presentations in which symptoms characteristic of a depressive disorder that cause clinically significant distress or impairment predominate, but do not meet full criteria for any disorders in the depressive disorders diagnostic class.
Anxiety disorders	
Agoraphobia	Marked fear or anxiety about two or more of the following situations: using public transport, being in open spaces, being in enclosed spaces, standing in a line or being in a crowd, being outside alone. The individual fears or avoids these situations because of thoughts that escape might be difficult or help might not be available in the event of panic-like symptoms. Typically lasting six months or more.
Body dysmorphic disorder	Preoccupation with one or more perceived defects or flaws in physical appearance that are not observable or appear slight to others. At some point during the disorder the individual has performed repetitive behaviours or mental acts in response to appearance concerns.
Generalised anxiety disorder	Excessive anxiety and worry about a number of events or activities, with at least one of the following symptoms: restlessness, easily fatigued, difficulty concentrating, irritability, muscle tension, sleep disturbance. Occurring more days than not for at least six months.
Obsessive-compulsive disorder	Presence of obsessions, compulsions, or both. Obsessions: recurrent and persistent thoughts, urges or images that are experienced as intrusive and unwanted. The individual attempts to ignore or suppress the thoughts, urges or images. Compulsions: repetitive behaviours or mental acts that the individual feels driven to perform, which are aimed at preventing or reducing anxiety or preventing some dreaded event, however they are not connected in a realistic way with the dreaded event, or they are excessive.
Panic disorder	Recurrent unexpected panic attacks consisting of an abrupt surge of intense fear or discomfort that peaks within minutes and includes at least four of the following symptoms: palpitations, sweating, trembling, shortness of breath, feelings of choking, chest pain, nausea, feeling dizzy, chills or heat sensations,

	numbness or tingling, feeling detached, fear of losing control, fear of dying. At least one panic attack followed by one month of persistent worry about additional attacks or their consequences.
Post-traumatic stress disorder	Exposure to actual or threatened death, serious injury or sexual violence; persistent avoidance of stimuli associated with the traumatic event; negative alterations in cognitions and mood associated with the traumatic event; marked alterations in arousal and reactivity associated with the traumatic event; and presence of one or more intrusion symptoms such as recurrent, involuntary and distressing memories or dreams. Duration of disturbance is more than one month.
Separation anxiety disorder	Developmentally inappropriate and excessive fear or anxiety concerning separation from those to whom the individual is attached. Typically lasting at least four weeks.
Social anxiety disorder	Marked fear or anxiety about one or more social situations in which the individual is exposed to possible scrutiny by others, occurring in peer settings and not just in interactions with adults. Typically lasting 6 months or more.
Specific phobia	Marked fear or anxiety about a specific object or situation (e.g. flying, heights, animals, receiving an injection, seeing blood) that is out of proportion to the actual danger posed and to sociocultural context. In children the fear may be expressed by crying, tantrums, freezing or clinging. Typically lasting 6 months or more.
Other anxiety disorder	Applies to presentations in which symptoms characteristic of an anxiety disorder that cause clinically significant distress or impairment predominate, but do not meet full criteria for any disorders in the anxiety disorders diagnostic class.

ICD and DSM have many points of overlap, but also clear differences resulting from their distinct goals. The ICD is co-ordinated by the World Health Organization and aims to function as a “global common language for defining and communicating about diseases and health conditions”, with a strong focus on public health (Clark et al., 2017, p76-77). DSM, on the other hand, is produced by the American Psychiatric Association and aims to provide a classification system specific to mental disorders, with highly descriptive and specific diagnostic criteria designed to enable standardised identification of disorders for the purposes of research, in addition to clinical use (Clark et al., 2017). ICD is frequently used in clinical practice in Europe, while DSM is more commonly used clinically in the US, and for research purposes worldwide (Clark et al., 2017).

While ICD and DSM are commonly used by clinicians and researchers alike, these systems are not without their criticisms. These classification systems treat mental disorders as binary entities, to which any given individual either does, or does not, belong. Yet in reality psychopathology exists on a continuum. The boundaries between a mental disorder and normal human emotions, behaviours and experiences are rarely clear-cut, and the thresholds for classification systems such as ICD and DSM are subjective and, to a large extent, arbitrarily defined, as well as being dependent on current normative social expectations (Oldehinkel, 2019; Pine and Klein, 2015; Rogers and Pilgrim, 2014; Stringaris, 2015). Even DSM-5 states that "DSM, like other medical disease classifications, should accommodate ways to introduce dimensional approaches to mental disorders, including dimensions that cut across current categories" (American Psychiatric Association, 2013, p5), although there is little agreement on how to achieve that in practice (Rutter and Pine, 2018). This is important because imposing categorical classifications on phenomena that are naturally dimensional can lead to loss of important information and diagnostic instability (MacCallum et al., 2002; Markon et al., 2011).

Furthermore, categorical systems such as ICD and DSM imply that each category is distinct from all of the others, yet with respect to mental health disorders, this is often not the case. There is substantial symptom overlap between disorders, individuals diagnosed with different disorders often have various characteristics in common, and there is a large degree of comorbidity between disorders (Clark et al., 2017; Oldehinkel, 2019). This is particularly salient for emotional disorders where symptom overlap and rates of comorbidity are especially high. For example, estimates suggest that 48% of CYP with an emotional disorder have more than one diagnosable disorder, and in some clinical samples the proportion of comorbidity between anxiety and depression is as high as 75% (Garber and Weersing, 2010; Pearce et al., 2018). These high rates of comorbidity raise the question as to whether the different emotional disorders represent truly distinct conditions, or variable expressions of a shared underlying pathology. McElroy and Patalay (2019) conducted a network analysis to explore the nature of internalising symptoms in CYP and found evidence for a multitude of weak connections between different

symptoms, and little clustering of symptoms into “communities”, challenging the idea that such pathology takes the form of distinct disorders.

Nonetheless, classification systems such as ICD and DSM are useful and provide many benefits both to research and clinical practice. This includes: helping us to conceptualize and make sense of complex mental health problems; supporting the assignment of clinical diagnoses and assisting clinical decision-making; helping to determine individuals’ eligibility for mental health intervention; providing precise criteria for use in research studies; and helping to direct funding and resources to the most appropriate places.

1.1.2 Prevalence of emotional disorder

Precise prevalence estimates are influenced by the methods used, such as: the measures used to assess emotional disorders; the choice of diagnostic criteria (i.e. ICD or DSM); the informant(s) from whom information is gathered (e.g. child, parent or teacher); the age of participants; and the study sampling strategy. However, a recent meta-analysis, which included 48 studies from 27 different countries with CYP ranging from age 6 to 18 years, produced a pooled point prevalence estimate of 6.5% for any anxiety disorder and 2.6% for any depressive disorder (Polanczyk et al., 2015). Similarly, a 2017 survey on the mental health of 5 to 19 year olds in England reported point prevalence estimates of 7.2% for anxiety and 2.1% for depressive disorders (Vizard et al., 2018). In the text that follows, I provide further details regarding the prevalence of emotional disorders in CYP, along with a description of the characteristics of individuals who are most at risk of experiencing an emotional disorder. For this section, I focus primarily on results from the 2017 survey of the Mental Health of Children and Young People in England (from here on referred to as the “2017 MHCYP survey”) (Sadler et al., 2018b; Vizard et al., 2018), as this is the most recent population-based survey conducted in England.

In the 2017 MHCYP survey, the prevalence of emotional disorders (according to ICD-10 diagnostic criteria) was highest for those aged 17 to 19 years (14.9%), compared to 9.0% for 11 to 16 year olds and 4.1% for 5 to 10 year olds. This pattern of increasing risk of emotional disorder with increasing age has been consistently reported in prevalence studies conducted worldwide since the

1990s (Essau, 2005; Ford et al., 2003; Ghandour et al., 2019; Green et al., 2005; Lawrence et al., 2016). The 2017 MHCYP survey further explored age trends for anxiety and depressive disorders separately. As shown in Figure 1, the rates of both anxiety and depressive disorders increased with age, although anxiety remained more prevalent than depression across all ages, a finding which also replicates those from previous studies (Costello et al., 2005; Ford et al., 2003).

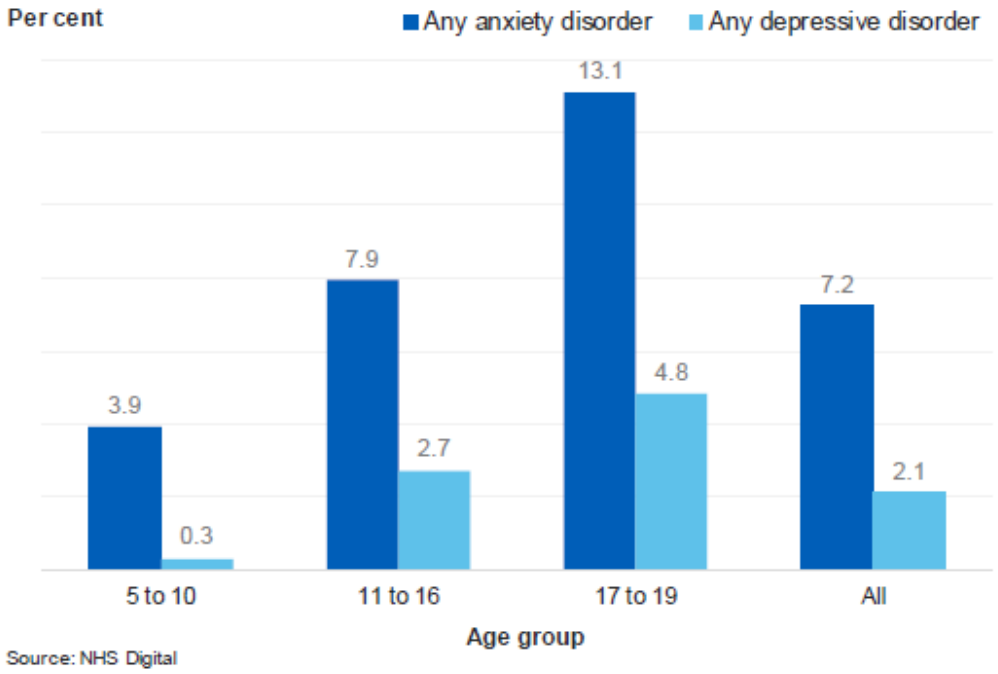

Figure 1. Anxiety and depressive disorders by age in the 2017 survey on the Mental Health of Children and Young People in England

Source: Vizard et al. (2018), p10

As shown in Figure 2, the percentage of CYP with emotional disorders in the 2017 MHCYP survey was similar for boys and girls aged 5 to 10 years, but a gender difference became apparent during adolescence, with girls more likely to be affected than boys. This gender difference was particularly pronounced for those aged 17 to 19 years; 7.9% of males in this age group had one or more emotional disorder, compared to 22.4% of females (see Figure 2). Other studies have consistently found emotional difficulties to be more prevalent in girls compared to boys (Deighton et al., 2019; Ford et al., 2003; Green et al., 2005; Lawrence et al., 2016; Merikangas et al., 2010), and this gender difference also persists into adulthood (Altemus et al., 2014).

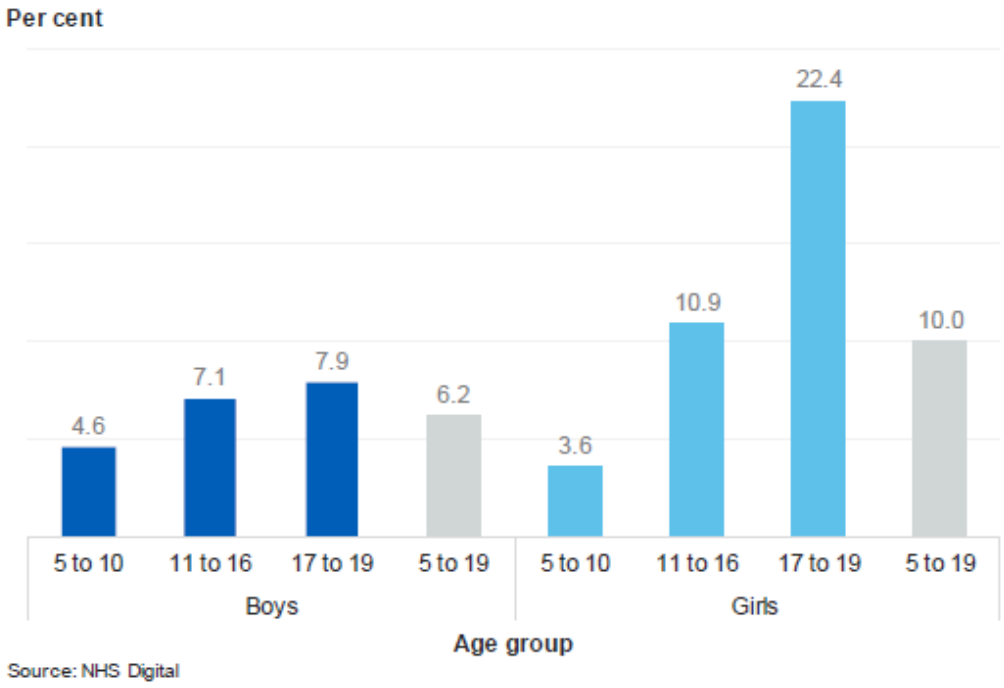

Figure 2. Prevalence of any emotional disorder by age and sex in the 2017 survey on the Mental Health of Children and Young People in England

Source: Vizard et al. (2018), p9

In terms of particular types of emotional disorders, the most common disorders across the whole 2017 MHCYP survey sample were “other anxiety disorders” (1.6% of CYP), generalised anxiety disorder (1.5%), major depressive disorder (1.5%), and panic disorder (1.1%) (Vizard et al., 2018). There were gender differences in the prevalence of particular disorders, with generalised anxiety disorder, major depressive disorder, panic disorder, social phobia, agoraphobia, body dysmorphic disorder and PTSD more common among girls compared to boys (see Figure 3). There were no gender differences for separation anxiety disorder, obsessive compulsive disorder, specific phobias, other anxiety disorders or other depressive episodes. However, many of these disorders had a low overall prevalence (e.g. agoraphobia affected 0.5% of the entire sample, or 78 children), thus the figures represented in Figure 3 have wide confidence intervals due to small sample sizes, and should be treated with caution (Vizard et al., 2018).

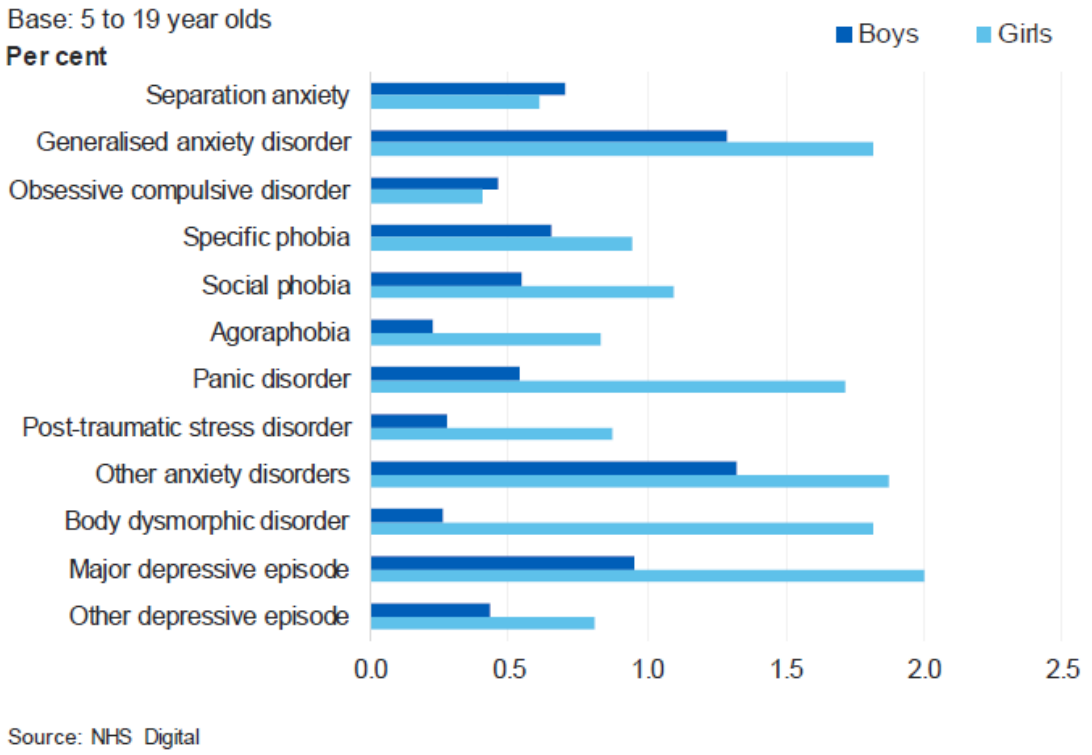

Figure 3. Prevalence of particular types of emotional disorder by sex in the 2017 survey on the Mental Health of Children and Young People in England

Source: Vizard et al. (2018), p12

1.1.2.1 Which children and young people are most likely to experience an emotional disorder?

The 2017 MHCYP survey found that a variety of background and demographic factors were associated with an increased or decreased risk of experiencing an emotional disorder. These included:

- **Ethnicity:** Overall, emotional disorders were more common in CYP of White British (9.1%) and Mixed/Other (8.9%) ethnic origin compared to those who were White Other (5.1%), Black/Black British (4.5%), and Asian/Asian British (4.2%) (Vizard et al., 2018). When analysed separately, anxiety disorders varied by ethnic group, but depressive disorders did not. A recent survey of over 28,000 11 to 14 year olds in England also found that high levels of emotional symptoms were more common in individuals who described themselves as White compared to those from ethnic minority groups (Deighton et al., 2019). However, a

recent population survey in the US found that anxiety disorders were most common in CYP who described themselves as Non-Hispanic white, while depression was most common in those reported as Non-Hispanic black (Ghandour et al., 2019), suggesting that effects related to ethnicity may vary by country or culture.

- **Socioeconomic status:** 9.0% of CYP living in the lowest quintile-based group of income had an emotional disorder, compared to 4.1% of those in the highest group (Vizard et al., 2018). Children and young people whose parent(s) were in receipt of benefits were also more likely to have an emotional disorder, particularly if those benefits were related to disability (16.8% of CYP whose parent(s) were in receipt of disability benefits had an emotional disorder, compared to 6.0% of those whose parent(s) were not in receipt of disability benefits). This pattern was observed for both anxiety and depressive disorders. Greater prevalence of emotional disorders in CYP from low socioeconomic backgrounds is widely reported in the literature, including from studies conducted in the US (Ghandour et al., 2019), Australia (Lawrence et al., 2016; Sawyer et al., 2001), and in other research from the UK (Deighton et al., 2019; Green et al., 2005).
- **General health:** Children and young people whose general health was reported by their parent to be fair, bad or very bad were more likely to have an emotional disorder (25.4%) compared to those whose general health was good (11.7%) or very good (4.0%) (Vizard et al., 2018). The association between general health and emotional disorder was found for both anxiety and depression. A similar pattern has been reported in previous population surveys in the UK and US (Ghandour et al., 2019; Green et al., 2005), and other studies have demonstrated that CYP with chronic physical conditions have a greater risk of depression and emotional difficulties compared to their peers (Glazebrook et al., 2003; Hysing et al., 2007; Pinquart and Shen, 2011). Glazebrook et al. (2003), for example, reported that CYP attending paediatric outpatient clinics had approximately three times the odds of having high emotional difficulties scores on the Strengths and Difficulties Questionnaire, compared to a

community sample (odds ratio for: boys 2.85 (95% confidence interval (CI) 1.97 to 4.11); girls 3.04 (1.92 to 4.70)).

- **Special educational needs**: Children and young people with special educational needs were three times as likely to have an emotional disorder as those without special educational needs (20.3% versus 6.0%) (Vizard et al., 2018). Both anxiety and depressive disorders were more common in CYP with special educational needs. However, an important caveat is that the identification of the requirement for special educational support now includes Social, Emotional and Mental Health needs, hence for some CYP the emotional disorder itself is likely to be the recognised special educational need (Vizard et al., 2018).
- **Family functioning:** Children and young people living in families with less healthy functioning, as assessed by the McMaster Family Assessment Device, were more likely to have an emotional disorder compared to those living in families with healthier functioning (13.8% versus 5.8%) (Vizard et al., 2018). When analysed separately, this was the case for both anxiety and depressive disorders. The same effect of family functioning was also reported in the previous population survey on the mental health of CYP in the UK (Green et al., 2005).
- **Parental mental health:** Children and young people whose parent had poor self-reported mental health (assessed using the 12-item General Health Questionnaire) were five times as likely to have an emotional disorder as those whose parent had good mental health (25.2% versus 5.0%) (Vizard et al., 2018). A similar pattern was observed for both anxiety and depressive disorders in relation to parental mental health. Again, the relationship between poor parental mental health and an increased risk of child emotional disorder is consistently reported in the literature (Essau, 2005; Ghandour et al., 2019; Green et al., 2005).

It is important to note, however, that much of the research described above, including the 2017 MHCYP survey, was cross-sectional in nature, and therefore we cannot draw any conclusions about causal relationships. Reverse causality is certainly feasible for many of these characteristics; for example, while having a parent with poor mental health may increase a young person's risk of

emotional disorder, having a child with an emotional disorder may also increase parents' risk of experiencing mental health problems.

In addition to the individual and family-related factors explored in the 2017 MHCYP survey, a variety of broader social, societal, and cultural factors are associated with an increased risk of emotional disorder. This includes, for example, being bullied by peers, living in unsafe communities, and school-level influences such as poor school safety, low levels of academic support, and a poor quality physical school environment (Arseneault, 2018; Fowler et al., 2009; Melvin et al., 2019). The identification and interpretation of mental health problems, including anxiety and depression, is also known to vary between different countries and cultures, and the same mental health conditions may in fact be expressed in different ways in different cultures (Lewis-Fernandez and Aggarwal, 2013; Polanczyk et al., 2015). The ability to access healthcare services, including specialist mental health services, is also a key consideration, and this is discussed in further detail in Sections 1.1.2.2 and 1.1.5 below.

Risk factors for emotional disorder rarely occur in isolation, and there is a need to consider the potential for interactions between different risk factors. In a 2018 Lancet Commission on global mental health and sustainable development, Patel et al. (2018) emphasised "a convergent model of mental health, recognising the complex interplay of psychosocial, environmental, biological, and genetic factors across the life course, but in particular during the sensitive developmental periods of childhood and adolescence" (p1556). An additional key theory in this field is Bronfenbrenner's bioecological model, which states that in order to understand child development and behaviour, one must consider the entire ecological system around the child, as well as the potential for interactions between factors at different levels of this system (Bronfenbrenner and Morris, 2006). The most recent version of Bronfenbrenner's model posits that proximal processes (e.g. family, school and peers) are the most powerful predictors of mental health outcomes, but that these processes are strongly influenced by personal characteristics and the context in which they occur (Eriksson et al., 2018). It has been argued that models such as Bronfenbrenner's bioecological framework, which give consideration to the role of a wide range of risk factors as well as the interactions between them, have

the potential to improve our understanding of the determinants of mental health problems, and provide a useful framework for research and practice in this field (Eriksson et al., 2018).

1.1.2.2 Is the prevalence of emotional disorder increasing?

There is increasing widespread concern about the mental health of CYP. Headlines such as “Teens are increasingly depressed, anxious, and suicidal” (Resnick, 2019) and “Mental health of pupils is ‘at crisis point’, teachers warn” (Weale, 2019) are regularly featuring in the press. Recent years have seen a rise in the number of referrals to Child and Adolescent Mental Health Services (CAMHS) (Hagell et al., 2015), and a 2019 report by the British Broadcasting Corporation (BBC) reported that referrals to child mental health units from UK primary schools have risen by nearly 50% since 2016, according to data obtained from Freedom of Information requests to 46 mental health Trusts (Titheradge and Thomas, 2019). In addition, in recent years there has been an increase in hospital admissions for self-harm in CYP, particularly girls (National Society for the Prevention of Cruelty to Children, 2016), and according to the Department of Health and Social Care, the number of CYP attending Accident and Emergency for psychiatric conditions almost doubled between 2012-13 and 2017-18, from 13,800 to 27,487 (Department of Health and Social Care, 2019). However, these statistics do not refer to emotional disorders specifically.

Initial empirical evidence for an increase in the prevalence of emotional disorders in CYP was provided by Collishaw et al. (2004), who demonstrated that while parent reports of depressed mood and anxiety among 15 to 16 year olds in the UK did not increase between 1974 and 1986, there was an increase in parent-reported symptoms between 1986 and 1999. Further studies have demonstrated that, while the prevalence of other mental health problems in CYP has remained relatively stable, emotional difficulties have increased in the 21st century, with particular concerns expressed in relation to the rising prevalence among adolescent girls (Bor et al., 2014; Collishaw, 2015; Fink et al., 2015). These studies, however, all utilised measures of emotional difficulties or emotional symptoms, as reported by CYP and/or their parents and teachers, and as such there has been little evidence to suggest whether the prevalence of emotional *disorders* is increasing.

The 2017 MHCYP survey provided an opportunity to examine trends in emotional disorders by comparing current prevalence rates with those obtained from the two previous surveys conducted in 1999 and 2004. As shown in Figure 4, the data from these surveys showed that while the prevalence of emotional disorders in 5 to 15 year olds was relatively stable between 1999 and 2004 (4.3% and 3.9%, respectively), the overall rate had increased by 2017 (5.8%). The higher rate of emotional disorder in 2017 was evident for both boys (4.2% in 1999, 3.3% in 2004, and 5.6% in 2017) and girls (4.4% in 1999, 4.5% in 2004, and 6.1% in 2017) (Sadler et al., 2018a). This report only explored trends for diagnosis of any emotional disorder, thus it is unclear whether the increasing prevalence is driven by an increase in anxiety disorders, depressive disorders, or both.

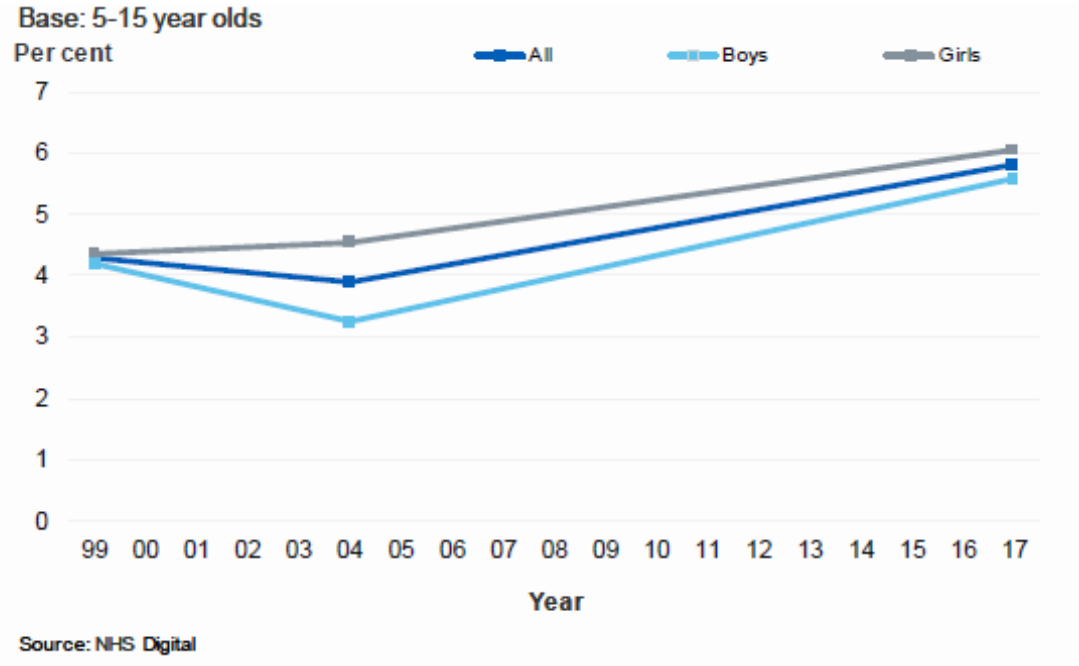

Figure 4. Prevalence of emotional disorders by sex in the 1999, 2004 and 2017 National surveys on the Mental Health of Children and Young People in England

Source: Sadler et al. (2018a)

Although the increase in the prevalence of emotional disorders is small in percentage terms, this amounts to a substantial additional number of CYP at a population level. Using 2017 population figures available via the Office for National Statistics, the difference between 3.9% (the overall rate of emotional disorders in the 2004 survey) and 5.8% (the overall rate in the 2017 survey) amounts to approximately 162,000 additional 5 to 15 year olds affected by these disorders (Office for National Statistics, 2018).

Despite evidence for an increase in the prevalence of emotional disorders, substantial cuts were made to CAMHS post-2010 and there are concerns that funding allocated to CAMHS has in fact been used to support other NHS services (Young Minds, 2013; Young Minds, 2016). On average, Clinical Commissioning Groups (CCGs) in England spend 14% of their overall budget on mental health, but only 0.9% of their budget on CYP's mental health, which means that adult mental health services receive 15 times the level of funding given to CYP's mental health, even though CYP make up 20% of the population (Children's Commissioner, 2018). There have been significant increases in CAMHS referral thresholds and waiting times in recent years. Of more than 338,000 CYP referred to CAMHS in 2017, only 31% received treatment within a year; 37% were not accepted into treatment, and a further 32% were still on waiting lists a year after referral (Children's Commissioner, 2018). In addition, a survey of 302 General Practitioners (GPs) in England found that 85% of them believe child mental health services are inadequate or extremely inadequate (stem4, 2016), and the current situation regarding the mental health of CYP in the UK has been described as a mental health "crisis", whereby service provision cannot meet service demand (Humphrey, 2018; Patel et al., 2018).

1.1.3 The impact of emotional disorders

Emotional disorders are identified by the World Health Organization as leading contributors to the burden of disease in CYP worldwide (Gore et al., 2011; Mokdad et al., 2016). These disorders cause considerable distress, have a profound impact on CYP and their families, and are associated with a variety of impairments in health, education and social functioning (Clayborne et al., 2019; Fergusson and Woodward, 2002). Emotional disorders are also associated with an increased risk of mortality, and one study found that CYP with depression

were ten times as likely to take their own life as those without depression (Bridge et al., 2006).

Rates of relapse and recurrence for emotional disorders are high, and CYP who experience these disorders during childhood or adolescence are at an increased risk of experiencing depression, anxiety, and suicidal ideation in adulthood (Copeland et al., 2013; Costello and Maughan, 2015; Johnson et al., 2018; Rutter et al., 2006). Childhood emotional disorders are also associated with an increased risk of a range of other adverse outcomes in adulthood including unemployment, early parenthood, low income, poor social relationships, poor physical health, higher healthcare utilisation, and a higher likelihood of being in contact with criminal justice services (Clayborne et al., 2019; Costello and Maughan, 2015; Fergusson et al., 2007; Knapp et al., 2016).

Childhood emotional disorders also have substantial economic costs resulting from increased access to healthcare and education resources (Bodden et al., 2018; Knapp et al., 2016), and this additional economic burden continues into adulthood (Ssegonja et al., 2019). In a 2016 report on the economic challenges of child mental health problems in England, the average annual mental health related costs for 12 to 15 year olds with emotional disorders were estimated at £1,353, with 90% of the costs across all types of mental health disorders incurred by the education sector (Knapp et al., 2016). This same report concluded that: “To neglect mental illness in young people is not only morally unacceptable, but also an enormous economic mistake” (Knapp et al., 2016, p7).

1.1.4 Interventions for emotional disorder

In England, the National Institute for Health and Care Excellence (NICE) recommends psychotherapy as a first-line treatment for depression and anxiety in CYP, which may include individual, group or digital Cognitive Behavioural Therapy (CBT), interpersonal psychotherapy, or family therapy (National Institute for Health and Care Excellence, 2014; National Institute for Health and Care Excellence, 2019). There is emerging evidence to suggest that guided and unguided self-help interventions are effective for treating both anxiety and depression in CYP, although such interventions typically perform less well when

compared to those involving face-to-face contact with a therapist (Bennett et al., 2019). A meta-analysis published in 2017, which included five decades of research on the effects of child psychotherapy, reported a mean post-treatment effect size of 0.61 for anxiety (95% CI 0.53 to 0.70; from 143 studies) and 0.29 for depression (95% CI 0.14 to 0.43; from 47 studies), with little difference between different types of therapy (Weisz et al., 2017). According to standard guidelines for the interpretation of effect sizes, these suggest a moderate effect of psychotherapy for anxiety, but only a small benefit for depression (Cohen, 1992).

Pharmacological treatment, most commonly with Selective Serotonin Reuptake Inhibitors (SSRIs), is also a treatment option for emotional disorders. Such treatments are widely accepted for use with CYP in the US, but much less so in Europe (Pine and Klein, 2015). In the UK, NICE recommends antidepressants for the treatment of moderate-to-severe depression in CYP, although it does not recommend that pharmacological interventions be routinely offered for anxiety disorders (National Institute for Health and Care Excellence, 2014; National Institute for Health and Care Excellence, 2019). The risk for side-effects is greater for pharmacological treatment compared to psychotherapy, and this includes an increased risk of suicidal ideation and suicide attempts (Brent and Maalouf, 2015). Nonetheless, pharmacological treatment may be an important option for some CYP, and there is also evidence that combining antidepressants with psychotherapy may provide greater benefits for some individuals compared to either treatment alone (Davey et al., 2019; Foster and Mohler-Kuo, 2018).

Interventions for emotional disorder may also be delivered in school settings, and these are commonly categorised into three groups: (a) universal interventions, involving a whole-school intervention that is provided to all pupils; (b) targeted (or selective) interventions, which are provided to individuals considered at risk of developing mental health problems; and (c) indicated interventions, which are provided to pupils who are already experiencing mental health problems (Fazel et al., 2014). School-based interventions for emotional disorders most commonly adopt a CBT approach, and several systematic reviews have reported small but statistically significant benefits of these

interventions immediately post-intervention and for up to 12 months afterwards (Calear and Christensen, 2010; Kavanagh et al., 2009; Neil and Christensen, 2009; Waldron et al., 2018; Werner-Seidler et al., 2017). For example, in their systematic review and meta-analysis, Werner-Seidler et al. (2017) reported pooled post-intervention effect sizes for all types of intervention combined (universal, targeted and indicated) of 0.23 for depression (95% CI 0.19 to 0.28; from 57 studies) and 0.20 for anxiety (95% CI 0.14 to 0.25; from 41 studies). While these effect sizes are small in statistical terms, they may still be associated with meaningful shifts in symptoms at a population level.

There is some evidence to suggest that targeted and indicated interventions produce greater effect sizes than universal interventions, and many high-income countries are adopting a multi-tiered approach, combining universal interventions delivered to the whole school, with targeted and indicated interventions for pupils identified as having additional mental health needs (Domitrovich et al., 2010; Fazel et al., 2014). However, the authors of two systematic reviews have also concluded that the overall quality of studies in this field is poor, and have identified a need for further high quality trials, including long-term follow-ups, in order to support large scale roll out of school-based interventions for emotional disorders (Calear and Christensen, 2010; Werner-Seidler et al., 2017).

Although the available treatment approaches are beneficial for many individuals, a significant portion (~40% to 60%) of CYP who receive an evidence-based treatment continue to experience substantial difficulties at the end of treatment (Creswell and Waite, 2016). A 2018 study that evaluated the level of “reliable improvement” (defined as a level of change greater than could likely be attributed to measurement error) after treatment in specialist mental health services in England found that only 53% of CYP with anxiety and 44% of those with depression showed reliable improvement at the end of treatment (Edbrooke-Childs et al., 2018). There is therefore a continued need to develop new treatment approaches, to explore which treatments work best for which individuals, and to find ways to improve outcomes for CYP whose difficulties are resistant to the currently available treatments.

1.1.5 Barriers to treatment

An unmet need for mental health care is recognised as a global public health concern (Jensen et al., 2011; Patel et al., 2018). In 2017, 324,724 CYP in England accessed CAMHS; equivalent to 2.85% of the total population of CYP in England and representing only a fraction of those who need help (Children's Commissioner, 2018). This appears to be a particularly great concern for emotional disorders, as studies have demonstrated that CYP with these disorders are less likely to be in contact with a range of support services, and to receive treatment for their disorder, compared to CYP with other types of mental health condition (Ford et al., 2007; Merikangas et al., 2010). A recent survey of CYP in England found that only 38% of 7 to 11 year olds with an anxiety disorder had received some type of professional support to help them manage or overcome their difficulties, and only 2% had received CBT (Reardon et al., 2019).

Young people and their families may experience substantial barriers to receiving treatment for emotional disorders, among which include long waiting times, the logistics of attending appointments, dismissive attitudes from healthcare professionals, social stigma, and a perceived lack of treatment effectiveness (Reardon et al., 2017; Reardon et al., 2018). Parents also acknowledge that their own ability to recognise that their child has a mental health problem, and to differentiate between developmentally appropriate versus clinically significant symptoms, are barriers to help-seeking for child anxiety (Reardon et al., 2019; Reardon et al., 2018). A study by Parker et al. (2018) found that emotional disorders were more likely to be unrecognised by parents and teachers, compared to other mental health conditions such as behavioural or neurodevelopmental disorders.

Even healthcare professionals struggle to accurately identify CYP who are experiencing emotional disorders. One study of healthcare professionals in the Netherlands (which included psychologists, paediatricians and psychiatrists) found that they correctly identified only 58% of CYP with generalised anxiety disorder, and 60% of those with depression, from a series of case vignettes (Burke et al., 2016). It is likely that the internalising nature of anxiety and depression makes it more difficult for adults to recognise these disorders

compared to other disorders that involve more external displays of difficulties. Furthermore, GPs and teachers report being more concerned about CYP who present with mental health problems that are behavioural, rather than emotional, in nature (Jacobs and Loades, 2016; Loades and Mastroyannopoulou, 2010).

1.2 The role of schools in children and young people's mental health

"[Schools] are first and foremost places of learning, of building competencies and academic achievement; but they are also places of safekeeping, of care and encouragement in creating the health and the confidence necessary for future independence in adulthood." Peter Wilson, Director of Young Minds; in Atkinson and Hornby (2005)

Schools have become a major focus of the discussion around the mental health of CYP. There is an increasing emphasis in health and education policy on the role that schools play in the promotion of mental wellbeing and the identification of individuals who are experiencing mental distress, as well as referral to specialist services where appropriate (Atkinson and Hornby, 2005; Department of Health & Department for Education, 2017; Young Minds, 2017). Indeed, many schools already play an important role in supporting the mental health of their pupils. A survey of 2,780 schools and colleges in England (including primary, secondary and special schools in addition to Pupil Referral Units[1]) found that nearly all (99%) reported efforts to identify pupils with particular mental health needs, 61% currently offer counselling, and 90% offer staff training on supporting pupils' mental health and wellbeing (Marshall, 2017).

However, a study on the mental health support provided by schools in 10 European countries (including the UK) reported that only 47% indicated pupil mental health was a high/essential priority, 58% reported that they did not implement a school policy regarding mental health, and only 33% reported good or excellent links with local mental health services (Patalay et al., 2016). Currently, there is no requirement for schools in England to have specific

[1] Pupil Referral Units are schools that are established and maintained by a local authority to provide education for permanently excluded pupils, and for pupils who would not receive suitable education without such provision, for example because of illness or other reasons Department for Education (2013).

policies in place regarding the mental health of pupils, and an analysis of policies from 100 schools in England found that only 3% had a policy regarding pupil mental health available online (Brown 2018).

In 2017 the UK Government published a Green Paper that outlined proposals for a new approach to ensuring that all CYP have access to high quality mental health and wellbeing support linked to their school or college (Department of Health & Department for Education, 2017). The proposed approach involved three key elements: (1) encouraging every school and college to identify a Designated Senior Lead for Mental Health to oversee the approach to mental health and wellbeing; (2) funding of new Mental Health Support Teams to provide extra capacity in schools for early intervention, supervised by CAMHS staff and managed jointly by schools, colleges and the NHS; and (3) trialling a four-week waiting time for access to specialist NHS CAMHS services as the new Mental Health Support Teams are rolled out.

The Green Paper was largely praised for being a step in the right direction. However it was also criticised for lacking ambition, putting significant pressure on teachers without guaranteeing the provision of additional resources, its narrow scope that overlooked vulnerable groups of CYP, and lacking commitment to the Designated Senior Lead for Mental Health role as it is voluntary and has no clear training available (House of Commons Education and Health and Social Care Committees, 2018; Young Minds, 2018). The slow implementation was also criticised, since the Green Paper specified plans to roll-out to “at least a fifth to a quarter of the country by the end of 2022/23” (Department of Health and Department for Education, 2017, p4).

In February 2019 the Education Secretary for England, Damian Hinds, unveiled new guidance for the introduction of compulsory health education in schools, which stated that from 2020 pupils of all ages will be taught about mental and physical wellbeing, including how to spot the signs of common mental health problems like anxiety and depression, and how to access professional help (Department for Education and The Rt Hon Damian Hinds MP, 2019a). The aim in making health education universal is to “ensure pupils are prepared for the opportunities and challenges of an ‘ever more complex’ world” (Department for Education and The Rt Hon Damian Hinds MP, 2019a). In July 2019 the

Education Secretary subsequently set out plans for National roll-out of a £9.3 million training scheme entitled the “Link Programme”, in which a staff member from every school, college and alternative education provision will be offered training alongside mental health specialists, with the aim of encouraging collaborative working and providing school staff with the information they need to ensure pupils receive prompt mental health support when needed (Department for Education and The Rt Hon Damian Hinds MP, 2019b). The Department for Education and Department of Health and Social Care are also funding new Education Mental Health Practitioners, who will work as part of the new Mental Health Support Teams outlined in the Green Paper to deliver evidence-based early interventions for CYP in schools.

1.2.1 Why schools are well-placed to play a role in children and young people’s mental health

There are many reasons why schools are well-placed to play a role in CYP’s mental health. Half of all lifetime cases of mental disorder begin by the age of 14, hence the school years present a key time for early identification and intervention (Kessler et al., 2005). Schools are a central hub in most communities and almost all CYP are registered with a school, including those from minority groups and marginalised populations who are less likely to be in contact with specialist mental health services (Green et al., 2005). Children and young people spend an estimated average of 15,000 hours at school throughout their childhood (Rutter et al., 1979), providing prolonged contact and regular opportunities for mental health intervention.

Studies in the UK have consistently found teachers and other school staff to be the most commonly contacted professional in relation to the mental health of CYP, even more so than GPs and other healthcare professionals (Ford et al., 2007; Mandalia et al., 2018; Newlove-Delgado et al., 2015; Reardon et al., 2019). Parents of CYP with mental health problems often do not recognise that their child has a difficulty and struggle to know where to go for help, with teachers identified as a primary contact (Girio-Herrera et al., 2013; Reardon et al., 2018), and parents also believe that schools are well-placed to detect mental health problems and have an important role to play in promoting pupils’ mental health (Soneson et al., 2018).

A survey of 1,700 adolescents in Norway found that anxiety was associated with poorer health-related quality of life in school and friendship domains, but not in the family domain, suggesting that parents may not witness the situations in which their child is most impaired and highlighting the crucial role that teachers and other school staff may play in identifying and responding to childhood anxiety (Raknes et al., 2017). This view is also supported by the UK Education and Health Committees who state that schools have a unique insight into pupils' lives and are well-placed to recognise mental health difficulties, including those not identified at home (House of Commons Education and Health Committees, 2017).

Furthermore, health and education are closely linked. The World Health Organization suggests that optimising CYP's access to education is a key strategy for improving health outcomes, and it also states that the aptitude to learn and acquire an education is a core component of CYP's mental health (World Health Organization, 2013; World Health Organization, 2014). Young people who are better educated have better health and wellbeing, while pupils in better health have higher academic attainment (Bonell et al., 2014). School-based interventions aimed at enhancing pupils' social and emotional learning lead to improved academic performance as well as lowered levels of emotional distress (Durlak et al., 2011). These findings suggest that academic achievement and mental health are not a "zero-sum game", and that promoting pupils' mental health and wellbeing has the potential to improve their educational outcomes in addition to their health outcomes (Bonell, 2018; Bonell et al., 2014; Humphrey, 2018). Indeed, Public Health England recommends that promotion of health and wellbeing should be an integral part of school effectiveness strategies (Public Health England, 2014).

1.2.2 Challenges for schools in playing a role in children and young people's mental health

Despite the fact that schools are well-placed to play a role in supporting the mental health of CYP, there are also inherent challenges associated with this approach, not least of which that teachers and other educational practitioners are specialists in education, not mental health. Although teachers report believing that it is appropriate for mental health support to be provided in school

settings, and express a desire to support pupils with mental health problems, they also report concern that they lack the skills, training, time and resources to do so (Graham et al., 2011; Rothì et al., 2008; Walter et al., 2006).

"The government needs to decide whether they want us to be social workers and mental health workers, or educators." Head teacher, Pennine Way Primary School, England; in Titheradge and Thomas (2019)

Changes to education policy in England in recent years have arguably led to an increased pressure on schools to prioritise academic attainment at the expense of pupils' health and wellbeing (Bonell et al., 2014; Humphrey and Wigelsworth, 2016; Hutchings, 2016; Young Minds, 2017). Factors such as increased accountability measures, increased academic demands of the curriculum, a lack of importance given to mental health in education policy, and funding constraints, mean that schools may not be incentivised to shift limited resources away from educational attainment and towards mental wellbeing. A survey conducted by the charity Young Minds in 2017 reported that 70% of teachers agreed that the education system should be rebalanced to focus more on pupil wellbeing, and 81% of CYP felt that their school cared more about exam results than pupils' happiness (Young Minds, 2017). Furthermore, recent research conducted by The Children's Society demonstrated a significant drop in CYP's self-reported happiness at school over the last two years (The Children's Society, 2019).

In 2019, Ofsted made changes to the education inspection framework that may help schools to support pupils' wellbeing, for example by placing greater emphasis on the "quality" of education and reducing emphasis on academic performance, and by making Personal Development one of the four key judgements for each inspection (Ofsted, 2019). However, the new framework has also been criticised for continuing to inadequately prioritise mental health and wellbeing. For example, Young Minds claim that the new framework does not encourage schools to adopt a whole-school approach to mental health, nor does it refer directly to the links between mental health and behaviour (Young Minds, 2019).

Evidence also demonstrates that, while teachers believe they have an important role to play in pupils' mental health, they struggle to accurately identify individuals who are experiencing mental health problems, particularly emotional disorders (Cunningham and Suldo, 2014; Parker et al., 2018). A qualitative study by Shelemy et al. (2019) found that teachers are in fact aware of their own limitations in this respect, and express a desire and need for additional training to help them better identify pupils with mental health problems. This is concerning because the majority of schools currently rely on ad hoc methods based on the concerns of staff members to identify pupils who are experiencing mental health problems: 82% of 2,780 schools and colleges in England reported using this method, compared to 50% who use administrative data and 15% who use universal screening methods (Marshall, 2017). A body of research has also shown that teachers are most concerned about mental health problems that cause disruption to the classroom environment, such as conduct disorders or Attention Deficit Hyperactivity Disorder (ADHD), compared to anxiety or depression (Adelman and Taylor, 1999; Graham et al., 2011; Loades and Mastroyannopoulou, 2010; Rothì et al., 2008; Walter et al., 2006). Schools even report using disruptive behaviour as one of their main ways of identifying pupils with mental health problems, which is likely to contribute to the under-identification of those with emotional disorders (Brown, 2018).

1.2.3 Identifying emotional disorders in school settings

There is an urgent need to find new and improved ways to accurately identify emotional disorders in CYP, given that:

- The prevalence of emotional disorders in CYP is increasing;
- Service contact and treatment utilisation for these disorders is low;
- Teachers, parents and health professionals struggle to accurately identify CYP who are experiencing emotional disorders.

Universal school-based screening approaches have received attention for their potential to identify pupils who are at-risk, or already experiencing symptoms, of mental health problems. These approaches involve brief screening assessments delivered to the entire pupil population at periodic intervals, with the aim of identifying those individuals who require more detailed assessment

and/or intervention at an early stage. The main benefit of universal screening approaches, compared to other approaches such as ad hoc teacher nomination, is that they result in more accurate identification of those who are experiencing difficulties and reduce the number of at-risk pupils being overlooked (Anderson et al., 2019; Eklund and Dowdy, 2014; Eklund et al., 2009; Scott et al., 2009). In a recent survey with 290 parents of 3 to 10 year olds in England, the majority (82%) reported that they were in support of universal mental health screening in primary schools, although a minority (13%) raised concerns about stigmatisation, a lack of available follow-up care, and inaccurate identification (Soneson et al., 2018). A recent systematic review that evaluated evidence from 27 studies (21 of which were conducted in the US) on the effectiveness of school-based mental health screening methods concluded that universal screening approaches result in a high number of false positives and lack efficiency (Anderson et al., 2019).

The Department for Education suggests that routinely collected administrative data, including attendance data, can help schools to reliably identify pupils who are at risk of mental health problems (Department for Education, 2016c). In fact, 50% of schools and colleges in England already use administrative data to help them identify pupils with mental health needs and to monitor the success of mental health support packages (Marshall, 2017). It is possible that attendance data may serve as a helpful component of school-based mental health screening approaches, although the effectiveness of such an approach has yet to be formally evaluated.

1.3 School attendance problems

School is a key context for the cognitive and socio-emotional development of CYP, and school attendance problems have been recognised as a critical public health problem due to the range of adverse outcomes they are associated with (Hawkrigg and Payne, 2014). This includes poor academic attainment, school dropout, alcohol and drug abuse, lower levels of overall wellbeing, and adult unemployment (Attwood and Croll, 2014; Christle et al., 2007; Hancock et al., 2013; Heyne et al., 2019b; Malcolm, 2003). School attendance problems also place burden on teachers to help pupils catch up on missed academic work, negatively influence teacher morale, and may result in reduced availability of

school funding (Balu and Ehrlich, 2018; Heyne et al., 2019a; Wilson et al., 2008).

As shown in Figure 5, the overall rate of absence in the 2017/18 academic year in England was 4.8%, amounting to 59.1 million school days missed (Department for Education, 2019c). The Department for Education categorises absences into those that are authorised versus unauthorised. Authorised absence refers to: “Absence with permission from a teacher or other authorised representative of the schools. This includes instances of absence for which a satisfactory explanation has been provided, e.g. illness.” (Department for Education, 2019a, p7). Unauthorised absence refers to “Absence without permission from the school. This includes all unexplained or unjustified absences and arrivals after registration has closed.” (Department for Education, 2019a, p7). Unauthorised absence in England is now at its highest since records began, although authorised absence (of which illness is the main driver) still accounts for 73% of overall absence (see Figure 6) (Department for Education, 2019c). One in nine pupils in the 2017/18 academic year were classed as “persistently absent” as a result of missing 10% or more of available school sessions, and persistent absentees accounted for 32% of authorised and 54% of unauthorised absence for that year (Department for Education, 2019c).

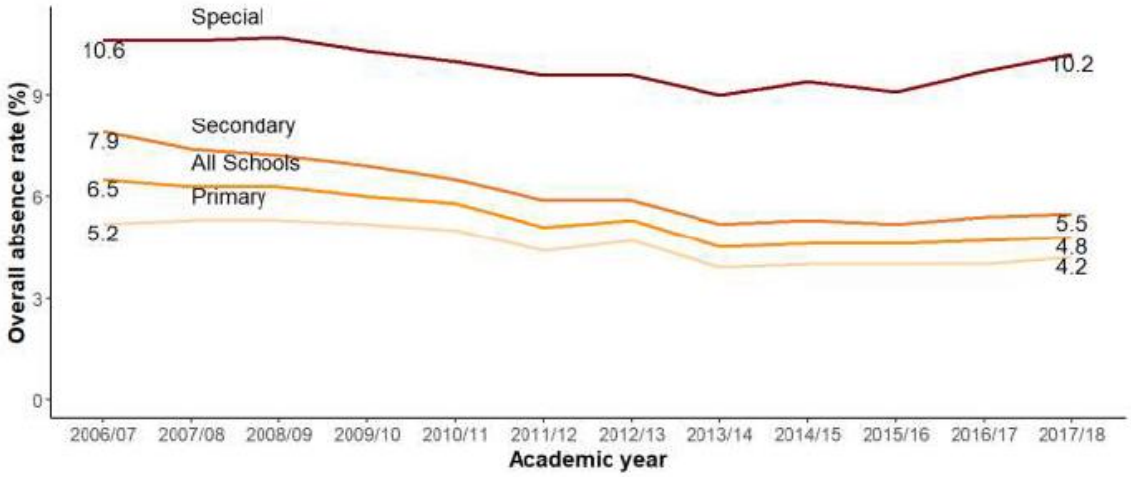

Figure 5. Overall absence rates in state-funded primary, state-funded secondary, and special schools in England (per cent)

Source: Department for Education (2019c), p4

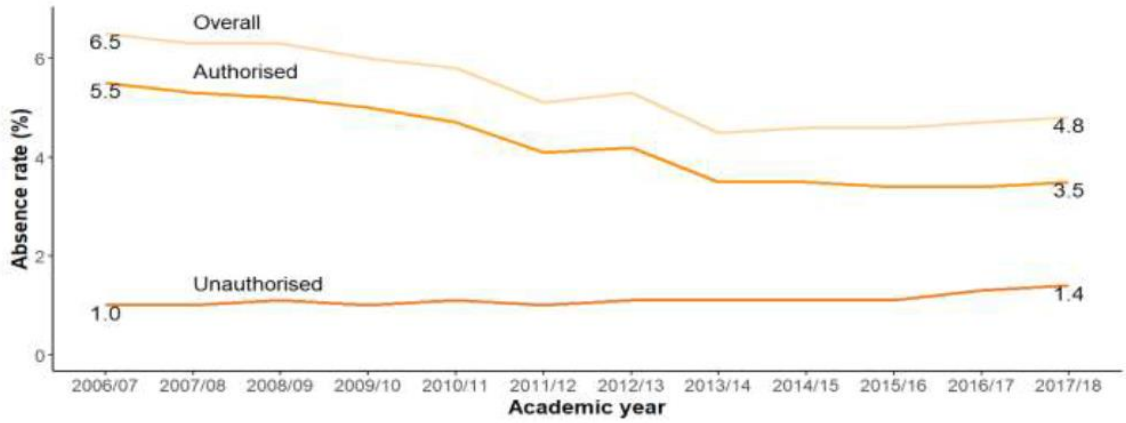

Figure 6. Rates of overall, authorised and unauthorised absence in schools in England

Source: Department for Education (2019c), p1

A variety of characteristics are associated with higher or lower rates of school absence, including:

- **Age/school level:** In England overall rates of school absence increase as age increases, in an approximately linear fashion (Department for Education, 2019c), and studies conducted in the US and Australia have demonstrated substantially higher absence rates in secondary compared to primary schools (Hancock et al., 2013; Skedgell and Kearney, 2018).
- **Ethnicity:** Studies have reported mixed evidence for a link between ethnicity and school absence, with some reporting higher rates of absence in those from ethnic minority groups, and others reporting the opposite relationship (Allison and Attisha, 2019; Bloom et al., 2011; Skedgell and Kearney, 2018). The latest data from England demonstrates that Traveller and Gypsy/Roma pupils have the highest rates of absence, while those from Chinese and Black African ethnic groups have the lowest absence rates (Department for Education, 2019c).
- **Socioeconomic status:** Evidence from studies worldwide consistently demonstrates that CYP from socioeconomically disadvantaged backgrounds have higher rates of absence than their peers (Attwood and Croll, 2006; Egger et al., 2003; Gottfried and Gee, 2017; Hancock et al., 2013; Ingul et al., 2012; Kearney, 2008b; Melvin et al., 2019). In England

pupils who claim free school meals have higher rates of overall absence compared to those who do not claim free school meals (7.6% compared to 4.3%). Furthermore, rates of persistent absence are nearly three times higher for those in the lowest decile-based group of income deprivation (i.e. the most deprived; 16%) compared to those in the highest decile-based group (i.e. the least deprived; 6%) (Department for Education, 2019c).

- **General health:** Not surprisingly, CYP who have poor general health, chronic physical conditions, or high levels of somatic symptoms all have higher rates of school absence than their peers (Allison and Attisha, 2019; Egger et al., 2003; Havik et al., 2015a; Lum et al., 2017).
- **Special educational needs:** Pupils with special educational needs in England had an overall absence rate of 8.7% in 2017/18, compared to 4.4% for those with no identified special educational needs, and this pattern is consistently reported throughout the literature (Department for Education, 2016a; Department for Education, 2019c; Havik et al., 2015a).
- **Type of school:** Overall absence rates are higher in special schools compared to mainstream schools (10.2% versus 4.9%; see Figure 5), and are substantially higher still in Pupil Referral Units where the average rate of overall absence is 35%, and 76% of pupils are persistently absent (Department for Education, 2019c).

It is interesting to note that several of the factors that are reported to be associated with higher rates of school absence are also associated with a higher prevalence of emotional disorder (see Section 1.1.2.1), including older age, low socioeconomic status, poor general health and the presence of special educational needs. It may be that these risk factors independently increase a young person's risk of both emotional disorder and school absence, or there may be more complex causal pathways between them; this has yet to be tested empirically.

Much like risk factors for emotional disorder (see Section 1.1.2.1), there are also a variety of factors beyond the individual that are associated with a higher risk of school absence. These include peer conflict or bullying (Ingul et al.,

2012; McShane et al., 2001); family influences such as neglectful parenting or a lack of parental involvement in school (Gase et al., 2014; Hendron and Kearney, 2016); and school factors such as school violence, low school connectedness and poor pupil-teacher relationships (Egger et al., 2003; Glew et al., 2005; Van Eck et al., 2017). Some research has found that it is unique combinations of risk factors, in addition to the total number of risk factors, that most strongly predict school attendance problems (Gottfried and Gee, 2017; Ingul et al., 2012). For example, Gottfried and Gee (2017) found that pupils in the lowest socioeconomic group who also had a disability were *less* likely to be chronically absent than those in the lowest socioeconomic group who did not have a disability, which the authors suggested may be because schools provide access to specialist disability services that CYP from low socioeconomic families might not otherwise be able to access.

In 2019, Melvin and colleagues presented the Kids and Teens at School (KiTeS) framework, which is an inclusive approach to understanding attendance problems based on Bronfenbrenner's bioecological model of child development (Bronfenbrenner and Morris, 2006; Melvin et al., 2019). This framework highlights the broad range of individual, familial and environmental factors that can contribute to attendance problems, and allows for consideration of how factors within different contexts may interact to produce adverse outcomes. Bioecological models such as KiTeS have the potential to inform research on the development of, and interventions for, school attendance problems, although their application in this field is relatively new and remains untested.

1.3.1 Terminology for school attendance problems

Historically, school attendance problems were categorised into two broad types: "school refusal" (also known as school phobia or school fear) and "truancy". Precise definitions for these concepts vary, but school refusal is generally considered to refer to non-attendance due to anxiety or emotional distress, characterised by the young person staying at home with their parents' knowledge and in the absence of antisocial behaviour (Berg et al., 1969; Heyne et al., 2019b). In contrast, truancy is generally considered to refer to non-attendance due to a lack of interest in school or defiance of authority, characterised by the young person staying at home without their parents'

knowledge and not due to anxiety or fear over attending school (Berg et al., 1969; Heyne et al., 2019b). That said, many researchers and policy-makers use the term truancy to refer to any unauthorised absence (Gentle-Genitty et al., 2015; Hunt and Hopko, 2009; Vaughn et al., 2013).

School refusal and truancy are commonly reported to be associated with internalising and externalising difficulties, respectively (Egger et al., 2003; Elliott and Place, 2017; Hawkrigg and Payne, 2014; Kearney, 2008b). However, not all CYP with school refusal experience internalising problems, and not all of those with truancy experience externalising problems. Furthermore, studies have demonstrated that some CYP meet criteria for both school refusal and truancy, suggesting that these two concepts are not mutually exclusive (Bools et al., 1990; Egger et al., 2003). As explained by Lyon and Cotler (2007): "Empirical data have repeatedly demonstrated that the categories of school refusal and truancy are neither comprehensive nor exhaustive and overlap considerably" (p559).

As a result, some researchers question the value of differentiating between different "types" of school attendance problem, instead favouring broader terms that make no assumptions about the underlying aetiology of the problem. However, there is even a lack of agreement about the choice of terminology for this broader concept, and a variety of terms are currently used in the literature including problematic absenteeism, chronic absenteeism, persistent absence, persistent non-attendance, and extended non-attendance (Allison and Attisha, 2019; Baker and Bishop, 2015; Kearney, 2008a; Lauchlan, 2003; Pellegrini, 2007). There is also little agreement over definitions for these terms and there is no clear evidence to suggest at what threshold absence becomes "problematic", although recent studies indicate that even small amounts of absence (perhaps as low as 1%) may carry an increased risk for mental health problems and other adverse outcomes (Heyne, 2019; Skedgell and Kearney, 2018).

Some researchers continue to use the criteria proposed by Kearney (2008a), which state that problematic absenteeism occurs when the young person is absent for at least 25% of the time for two or more weeks, or at least 15% of the time over a period of 15 weeks. Other researchers, however, report the prevalence of absence based on some other minimum absence criteria, which

may be as little as missing one day in a school term (Green et al., 2005), or as much as missing 20% of school days over a year (Siriwardhana et al., 2013). More recently, Skedgell and Kearney (2018) suggested making a distinction between “problematic absenteeism” (for which they propose a threshold of 1%, 3% or 5%) and “severe/chronic absenteeism” (for which they propose a threshold of 10%), but they acknowledge that using a threshold as low as 1% or 3% may be overwhelming for schools given the large number of pupils who will meet this benchmark.

Government policy in England and internationally typically uses 10% as the threshold for problematic or persistent absence (Allison and Attisha, 2019; Chang et al., 2019; Department for Education, 2019a), although this has been subject to change. When persistent absence began to be routinely measured in England in 2005, the threshold was 20% of school sessions, which was reduced to 15% in 2010 and to the current threshold of 10% in 2015. The Department for Education stated that the rationale for reducing the threshold was to encourage schools to take action at an earlier stage of attendance problems (Department for Education, 2011), although there is currently little empirical evidence to support any particular threshold.

For over a decade, the lack of consensus regarding terminology and methods of measuring school attendance problems has been recognised as a core problem in this field. As explained by Pellegrini (2007): “Researchers and practitioners could increase understanding of school non-attendance by working towards a shared definition of this behaviour” (p75). This continues to be recognised as a key priority by international researchers and practitioners in this field (Heyne et al., 2019a; International Network for School Attendance, 2019).

1.4 Emotional disorder and absence from school

As Chapter Three of this thesis (Systematic Review) presents a comprehensive synthesis of the evidence for an association between emotional disorder and school absence, this literature will not be discussed in detail here in order to avoid repetition. However, a brief explanation will be provided here.

Reports of a link between emotional disorder and school absence date at least as far back as the 1960s, most commonly in relation to school refusal, which

was assumed to be related to emotional disorders generally and, in particular, separation anxiety disorder (Berg et al., 1969; Hersov, 1960). More recent research has also supported an association between emotional disorder and school absence. For example, in the 2004 British Child and Adolescent Mental Health Survey (BCAMHS), 43% of 5 to 16 year olds with an emotional disorder had more than five days absent in the previous school term and 17% had more than 15 days absent, while the equivalent percentages for those with no mental health disorders were 21% and 4% (Green et al., 2005). In the 2017 MHCYP survey in England, a measure of overall absence was not included, but teachers were asked to report how often CYP had "played truant" from school, and 10% of those with an emotional disorder, compared to 1% of those with no disorder, were reported to have ever played truant (Mandalia et al., 2018).

1.5 A note on the terminology used in this thesis

In this section I provide a brief description and explanation for the terminology I use to refer to the key concepts in this thesis.

1.5.1 Terminology for emotional disorder

The terminology used to refer to emotional disorder differs between the different studies and chapters presented in this thesis, as follows:

- Systematic review (Study One) – reported in Chapter Three. The results section of Study One is split into three overarching sections:
    - Depression, which includes results from studies that reported diagnoses of depressive disorder *and* those that measured depressive symptoms;
    - Anxiety, which includes results from studies that reported diagnoses of anxiety disorder *and* those that measured anxiety symptoms; and
    - Emotional difficulties, which includes results from any studies that combined anxiety and depression, including those that reported diagnoses of any anxiety or depressive disorder *and* those that provided a combined measure of anxiety and depressive symptoms.

Full details of the precise concepts and measurement methods used by each included study is provided in Chapter Three.

- Quantitative studies (Studies Two and Three) – reported in Chapters Four and Five. The terminology used in Studies Two and Three mirrors the terminology used in the BCAMHS survey documents and the measures used within these surveys. This includes: (a) emotional disorder, which was assessed according to DSM criteria, and is further separated into anxiety and depressive disorders; and (b) emotional difficulties, which was assessed with the Strengths and Difficulties Questionnaire and provides a continuous measure of overall emotional difficulties/symptoms. Full details of the measures used to assess emotional disorder and emotional difficulties is provided in Chapters Four and Five.
- Qualitative study (Study Four) – reported in Chapter Six. The qualitative study was focused on school attendance problems as opposed to emotional disorder and hence no specific terminology for emotional disorder was selected. However, where mental health problems were discussed in focus groups and included in the paper, I mirrored the language used by participants (namely, “mental health problems”, and “anxiety”).

1.5.2 Terminology for school absence

The terminology used to refer to school absence also differs between the different studies and chapters presented in this thesis, as follows:

- Systematic review (Study One) – reported in Chapter Three. For this study, the term “poor attendance at school” is used. As explained in further detail in Chapter Three, the systematic review was intentionally broad in its scope and allowed for the inclusion of studies that measured and reported school attendance in any way. While some studies reported a quantitative measure of *absence*, other studies used descriptive measures, for example using the categorical definitions of school refusal and truancy as described above (see Section 1.3.1). Therefore, the term “absence” did not feel appropriate for Study One because not all studies

had measured absence per se, and the broad term of “poor school attendance” was chosen. In the results section, however, I use different terminology depending on what was measured by each of the included studies. Further details of precisely what was measured and the terminology used by each included study is provided in Chapter Three. Where appropriate, I refer to excused/unexcused (rather than authorised/unauthorised) absence throughout Study One. These alternative terms are used interchangeably in the school attendance literature and refer to the same concepts, but excused/unexcused is generally the terminology of choice in the US, while authorised/unauthorised is used more frequently in the UK. For Study One I chose to mirror the terminology used by the majority of included studies, and thus I refer to excused/unexcused absence.

- Quantitative studies (Studies Two and Three) – reported in Chapters Four and Five. As described in further detail in Chapters Four and Five, the quantitative studies utilised data from the 2004 and 2007 BCAMHS. The measure of school absence in these surveys was a teacher-report of the number of days in the previous school term that the child had been absent from school. Hence for Studies Two and Three, I use the term “absence” throughout. This is further categorised into authorised and unauthorised absence, as explained in Chapters Four and Five. For these studies I refer to authorised/unauthorised, rather than excused/unexcused absence, because this is the terminology used throughout the BCAMHS survey documents, and because this is the terminology used in education policy in England.
- Qualitative study (Study Four) – reported in Chapter Six. For this study the term “school attendance problems” is used. As explained in further detail in Chapters Two and Six, this study aimed to explore educational practitioners’ beliefs about risk factors for attendance problems. Participants in this study were not provided with a description or threshold for what would be considered an attendance “problem”, which was important given that there is very little empirical evidence to support any particular threshold. During analysis of the qualitative data it became apparent that focus group discussions had remained broad and did not

focus on any particular “type” of school attendance problem, hence the use of this broad terminology for the paper presented in Chapter Six.

1.6 Philosophy and assumptions underpinning this thesis

1.6.1 Epidemiology and observational research

This thesis presents findings from what is primarily epidemiological research. Epidemiology is the study of patterns of disease in human populations (Kleinbaum et al., 1982). These patterns are non-random distributions that provide an opportunity to investigate risk factors that are associated with a particular disease. The aim of epidemiology is to understand these observed patterns and to use this understanding as a basis for the prevention and treatment of disease, and as such, epidemiology is a pragmatic, action-oriented approach (Costello et al., 2005). However, it is important to note that epidemiology concentrates on understanding disease processes at the population (or sub-population) level, in contrast to clinical practice in which the focus is on the individual person. While epidemiology can and certainly does enable exploration of inter-individual differences in patterns of disease, these are still just patterns, which may or may not apply to any particular individual.

Most epidemiological research is observational rather than experimental in nature, meaning that it involves the observation of phenomena as they naturally occur, as opposed to experimental manipulation of variables. The main benefit of observational research is that it allows the investigation of phenomena that would be impossible or unethical to experimentally manipulate (such as childhood emotional disorder). However, given that naturally-occurring environments are inherently “noisy”, the potential for bias is higher in observational compared to experimental research, particularly due to the effects of uncontrolled confounding (i.e. when the true nature of an effect is obscured by the effects of other variables, or “confounders” (Jager et al., 2008)). It is also difficult to demonstrate cause and effect in observational research, although tools such as the Bradford Hill criteria can be used to help researchers assess the likelihood of a causal relationship between two variables in observational studies (Bradford Hill, 1965; Lucas and McMichael, 2005). The original research

presented in this thesis must be, and is, interpreted in light of the strengths and limitations of epidemiology and observational research described above.

1.6.2 The illness framework and the nature of mental (ill) health

By focusing on emotional *disorder*, this thesis inevitably follows the broad assumptions of the illness framework, which states that the changes in thought, mood and behaviour associated with mental health disorders like anxiety and depression are unwanted, pathological, and maladaptive (Antaramian et al., 2010; Murphey et al., 2013; Rogers and Pilgrim, 2014). However, it can also be argued that this illness-focused approach, derived from the medical model, problematises and stigmatises those who are experiencing difficulties. An alternative approach, which has emerged from the field of positive psychology, is to focus on individual strengths, resilience and mental *wellbeing* (Antaramian et al., 2010). Health is not just the absence of disease, and therefore it follows that mental health is not just the absence of mental illness. The World Health Organization defines mental health as “a state of wellbeing in which every individual realises his or her own potential, can cope with the normal stresses of life, can work productively and fruitfully, and is able to make a contribution to his or her community” (World Health Organization, 2016b).

Wellbeing is generally considered to include constructs such as subjective satisfaction with life, positive affect, and meaningful functioning and human development (Patel et al., 2018). However, attempts to agree upon a precise definition of wellbeing have been largely unsuccessful, and debate continues regarding how best to define and measure this concept (Dodge et al., 2012; Oldehinkel, 2019). An additional problem with focusing on wellbeing is that, despite the fact that definitions for mental health commonly incorporate wellbeing (including the definition provided by the World Health Organization above), emerging evidence suggests that mental health and wellbeing are related, but distinct concepts. For example, Patalay and Fitzsimons (2016) demonstrated that mental illness and mental wellbeing are only weakly correlated in CYP in the UK, and while these two concepts share some correlates (e.g. family structure, sibling bullying, peer problems), they also have unique correlates. More recently, Black et al. (2019) used confirmatory factor analysis to explore the structure of internalising symptoms, externalising

symptoms and wellbeing in early adolescents, and found that these constructs are best considered as distinct but related factors, rather than a single continuum. That is to say, that mental illness is not synonymous with the absence of mental wellbeing, nor is mental wellbeing synonymous with the absence of mental illness.

The dual factor model of mental health encompasses indicators of both positive subjective wellbeing and measures of psychopathological symptoms. According to this view, wellbeing and psychopathology are two distinct but inter-related constructs that both contribute to mental health (Antaramian et al., 2010; Suldo and Shaffer, 2008). The dual factor model typically organises individuals into one of four categories, those with: (a) low levels of psychopathology and high wellbeing ("complete mental health"); (b) low levels of psychopathology but low wellbeing ("vulnerable"); (c) high levels of psychopathology but high wellbeing ("symptomatic but content"); and (d) high levels of psychopathology and low wellbeing ("troubled") (Antaramian et al., 2010). Research supports the utility of the dual factor model in CYP and also demonstrates that it can help to identify individuals who would be overlooked by a typical illness-oriented approach even though they experience considerable impairment. For example, Suldo and Shaffer (2008) revealed that CYP classed as "vulnerable" had poorer reading attainment, less favourable academic self-perceptions, lower motivation, and a greater number of school absences, compared to the "complete mental health" group.

Arguments regarding the nature of mental health notwithstanding, it is clear that mental disorders, including anxiety and depression, are associated with substantial distress and impairments in functioning across a broad variety of domains (see Section 1.1.3). Therefore any healthcare approach that aims to reduce distress, minimise impairment and improve CYP's outcomes, must consider mental disorders in addition to mental wellbeing. Furthermore, the promotion of social functioning and wellbeing is often included in strategies to reduce the symptoms of mental illness, and so a focus on disease does not inherently imply a disregard of mental health (Oldehinkel, 2019).

1.7 Chapter summary

In this chapter I have provided an introduction to emotional disorders and school absence, and how they interrelate, as well as a discussion of the role of schools in the mental health of CYP. Chapter Two will provide an overview of the original research studies that comprise this thesis, followed by details of the aims, methods and rationale for each study.

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Chapter Two: Thesis overview

The purpose of this chapter is to provide an overview of the studies presented in this thesis and to highlight the aims, methods and rationale for each study.

2.1 Overview of thesis

The overarching aim of this thesis is to investigate the association between emotional disorder and school absence in CYP. This is achieved through a series of original research studies, which are presented in Chapters Three to Six. The evidence from each of the studies is then brought together in Chapter Seven (discussion), along with a consideration of the implications, and the strengths and limitations, of the body of work as a whole. The original research studies consist of two published journal articles (Chapters Four and Six), one article submitted to a journal for publication (Chapter Five), and one chapter not submitted to a journal (Chapter Three).

An overview of the studies that comprise this thesis is provided in Figure 7. They are as follows: (1) a systematic review of the existing evidence relating to associations between emotional disorder and poor school attendance; (2) a quantitative study to investigate cross-sectional relationships between emotional disorder and school absence in the 2004 BCAMHS; (3) a quantitative study to investigate longitudinal, bi-directional relationships between emotional disorder and school absence using data from the 2004 BCAMHS and its follow-up in 2007; and (4) a qualitative study to explore secondary school educational practitioners' beliefs about risk factors for school attendance problems (see Figure 7).

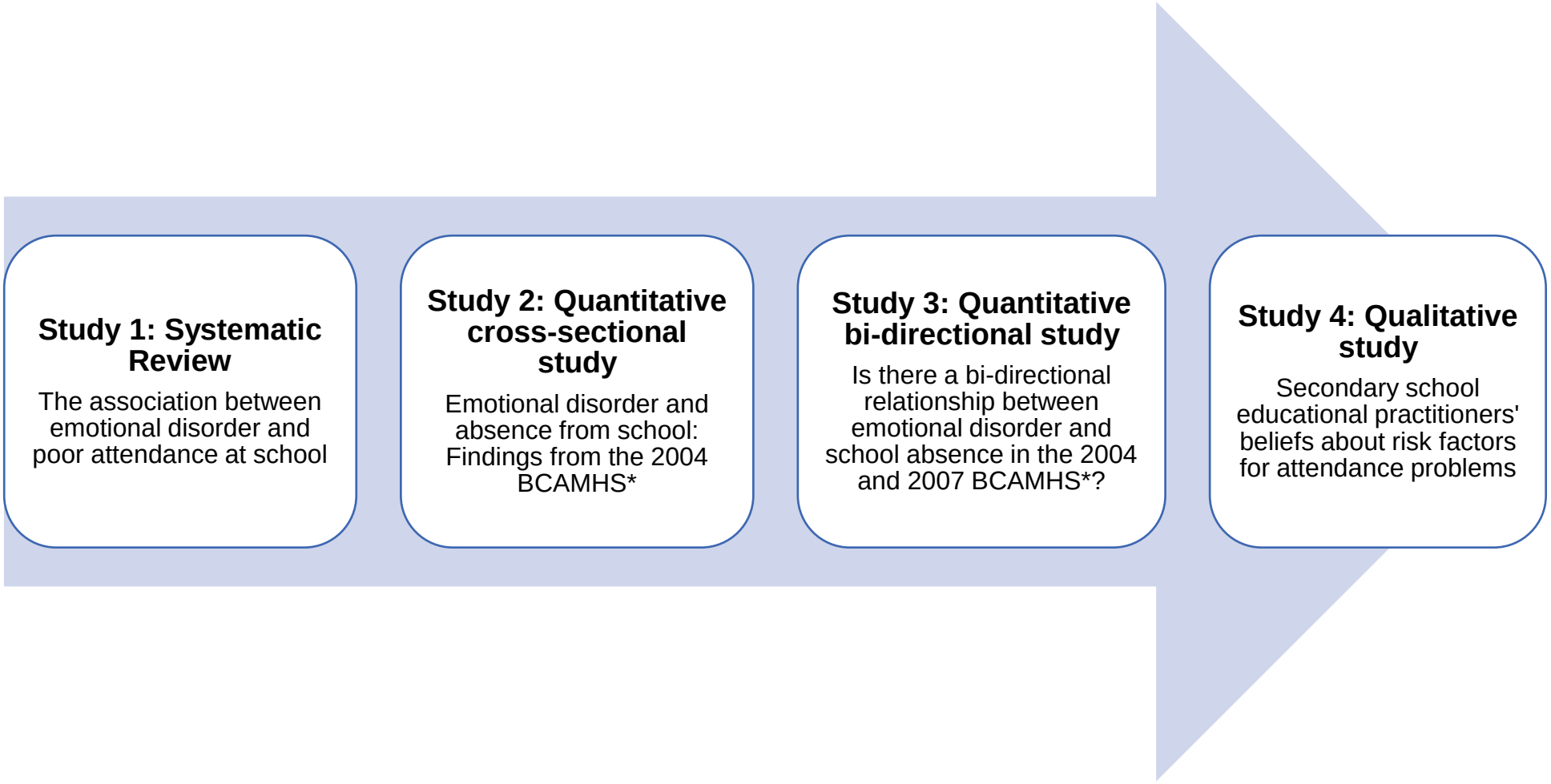

Figure 7. Overview of studies in thesis

*BCAMHS – British Child and Adolescent Mental Health Survey

2.2 Systematic review (Study One)

2.2.1 Aims and rationale

The first study in this thesis aims to systematically review the existing evidence investigating an association between emotional disorder and poor school attendance. This study was divided into multiple papers for the purposes of publication due to its extensive nature. Two of these have been published and are provided in Appendices Three and Four. The entire systematic review is presented in its original unpublished form in Chapter Three in order to aid readability and minimise repetition.

The systematic review aims to answer the following research questions:

> (1) Is there an association between child and adolescent emotional disorder and poor attendance at school?
>
> (2) Is this association moderated by between-study characteristics such as age of the children, type of emotional disorder, somatic symptoms, measurement source (e.g. child-report, parent-report), assessment method (diagnostic tool or measures of continuous symptoms), study setting or type of school?

Given that there had been no prior systematic reviews to examine the association between emotional disorder and poor school attendance, I considered this an essential first step in order to identify and summarise the existing evidence in relation to this topic, establish the strengths and limitations of the existing research, and identify gaps that could be explored in the remainder of the thesis.

2.2.2 Methodology

I chose to conduct a systematic review as this is considered to be the gold-standard approach for collating all empirical evidence in relation to a specific research question. Systematic reviews “use explicit, systematic methods that are selected with a view to minimising bias, thus providing more reliable findings from which conclusions can be drawn and decisions made” (Green et al., 2008, p5). Key characteristics of a systematic review include: a clearly stated set of objectives; pre-defined eligibility criteria for studies; explicit, reproducible

methodology; a systematic search that attempts to identify all studies that meet eligibility criteria; an assessment of the validity of the findings, for example through risk of bias or quality assessment; and a systematic presentation and synthesis of the characteristics and findings of the included studies (Green et al., 2008). Systematic reviews are commonly used to collate evidence in relation to the effectiveness of an intervention, but they can also be used to answer epidemiological research questions (Centre for Reviews and Dissemination, 2009).

Meta-analysis is an additional tool that can be used to statistically combine and summarise results from two or more studies, with the advantage of increasing statistical power and providing more precise effect estimates than would be possible from individual studies. However, meta-analyses have the potential to mislead if there is substantial variation or heterogeneity between the studies, for example in terms of the population being investigated or the measures used (Deeks et al., 2008). Therefore, for the systematic review presented in Chapter Three, meta-analysis was used where studies investigated the same constructs in comparable populations and reported the same summary statistic. For the remaining studies I used narrative synthesis; an approach that uses words and text to synthesise and summarise findings from multiple studies (Popay et al., 2006). As is good-practice when conducting a systematic review (Green and Higgins, 2008), I produced a protocol that specified the aims and methods of the review, prior to conducting the searches. This protocol was published in a peer-reviewed journal and is presented in Appendix One.

2.3 Quantitative cross-sectional study (Study Two)

2.3.1 Aims and rationale

Study Two aimed to address some of the research gaps and methodological limitations of the previous evidence as identified by the Systematic Review (Study One). Gaps identified in the previous literature included a lack of evidence for the relationship between emotional disorder and school absence in UK populations, and a focus on unexcused (or unauthorised) absence while neglecting excused (or authorised) absence, even though the majority of absences, both in the UK and internationally, are authorised (Department for

Education, 2019c; Kearney, 2008b). Methodological limitations of the previous research included a lack of adjustment for confounders, small sample sizes and poorly reported statistics. Previous studies had mostly utilised questionnaires that measured symptoms of anxiety and/or depression, and I wanted to establish whether a relationship exists for clinically diagnosable emotional disorders, in addition to emotional symptoms.

Given that there had been no formal moderator analyses conducted in the previous literature, I also aimed to explore gender, age and general health as moderators of the association, as it is possible that emotional disorder is only associated with school absence within certain subgroups of the population. Since the prevalence of emotional disorders and the rate of school absence are greater for secondary, compared to primary school-aged pupils (Department for Education, 2019c; Vizard et al., 2018), it is possible that the association between emotional disorder and school absence may also differ according to the age of the young person. In addition, emotional disorders are more prevalent in girls compared to boys, particularly during adolescence (Vizard et al., 2018), and hence I wanted to know if the relationship between emotional disorder and absence is also different for girls compared to boys. In terms of general health, somatic symptoms are common in CYP with emotional disorders and may contribute to school absence for some individuals (Campo, 2012). Thus I was interested to know whether the association between emotional disorder and absence was different for CYP whose parents rated their general health as bad versus good.

Therefore the aim of Study Two was to address the limitations of the existing evidence identified by the systematic review, and to: (a) investigate cross-sectional relationships between anxiety, depression and emotional difficulties, and school absence (total, authorised and unauthorised) using data from the 2004 BCAMHS; and (b) explore gender, age and general health as moderators of these associations.

2.3.2 Methodology

Secondary analysis of pre-existing data was the best way to achieve these objectives as this allowed for use of datasets with much larger samples and

more comprehensive measures than would have been possible through primary data collection. There are several large, high quality datasets that include data on the mental health of CYP in the UK. Two of these (the Millennium Cohort Study (MCS) and the BCAMHS) are publicly available and free to access via the UK Data Service (https://www.ukdataservice.ac.uk/). While the MCS benefits from multiple waves of data collection throughout childhood and adolescence, it lacks diagnostic measures of mental health disorders at most time-points, and only asks young people and their parents about unauthorised, and not authorised absence. The MCS was therefore considered unsuitable to address the aims of Study Two.

The BCAMHS, on the other hand, utilised diagnostic interviews to assess the presence of anxiety and depressive disorders in addition to a measure of emotional symptoms, and it provided information about both authorised and unauthorised absence. The BCAMHS was a large, nationally representative population survey of 5 to 16 year olds living in the UK, sampled via the Child Benefit register. A large variety of demographic and background information was gathered, which allowed for the exploration of the association of interest whilst controlling for confounders, which many previous studies had not done. The large sample size provided good statistical power, which was particularly important for the planned moderator analysis as this involves comparison of subgroups and hence lack of statistical power is a common problem. Further details regarding the methods of the original BCAMHS, and the methods of analysis used for the study presented in this thesis, are provided in Chapter Four.

2.4 Quantitative bi-directional study (Study Three)

2.4.1 Aims and rationale

An additional research gap identified by the systematic review was a lack of longitudinal research in this field. Thus, while there may be evidence to suggest that emotional disorder and school absence are related, there is little evidence to say which occurs first. One of the Bradford Hill criteria, which can be used to help researchers evaluate the causal nature of observed associations, is “temporality”, which states that the cause must occur before the effect (Bradford

Hill, 1965). Indeed, temporality is the only one of the nine criteria that is *necessary* for a causal association, i.e. if the proposed cause does not occur before the proposed effect, the relationship is not causal. Exploring the temporality of the relationship between emotional disorder and school absence with longitudinal data therefore serves to make a valuable contribution to our understanding of the potential causal relationships between them.

Intuitively it seems likely that emotional disorders may lead to school absence, for example through symptoms such as lack of motivation, difficulty concentrating, fatigue and insomnia; via attempts to avoid anxiety-provoking stimuli at school; and/or as a result of somatic symptoms such as stomach-aches and headaches. However, it is also possible that CYP who miss a lot of school are at greater risk for subsequent emotional ill health, due to missing out on many of the educational and social opportunities available to their peers who regularly attend school. The direction of these relationships has important implications for clinical and education practice. For example, if emotional disorder predicts subsequent absence, then efforts to identify emotional disorder at the first sign of difficulties may help not only to reduce distress, but may also help to minimise the potential negative impact of the disorder on the young person's future life-course as a result of poor school attendance. Alternatively, if absence predicts subsequent emotional disorder, then providing preventative mental health interventions to CYP who miss a lot of school may help to minimise any negative impact on their emotional health.

Therefore the aim of Study Three was to explore longitudinal, bi-directional relationships between emotional disorder/difficulties and each of total, authorised and unauthorised school absence in the 2004 BCAMHS and its follow-up in 2007.

2.4.2 Methodology

As previously described (see Section 2.3.2), secondary analysis of the 2004 BCAMHS was considered the most appropriate way to achieve the aims of Study Two. A three-year follow-up with the original BCAMHS participants was conducted in 2007 and hence provided an ideal dataset with which to achieve the aims of Study Three. The follow-up utilised similar research methods and

measures to the original survey, and included identical measures of emotional disorder, emotional difficulties and school absence. Therefore, the objectives of Study Three were achieved by exploring bi-directional relationships between: (a) baseline emotional disorder/difficulties with absence at follow-up; and (b) baseline absence with emotional disorder/difficulties at follow-up, in the 2004 and 2007 BCAMHS. Further details regarding the methods for Study Three are provided in Chapter Five.

2.5 Qualitative study (Study Four)

2.5.1 Aims and rationale

In the first year of my PhD programme I was invited to work with researchers at the University of Reading on a project that aimed to explore the experiences of secondary school educational practitioners in working with, and interventions for, pupils with attendance problems. The data had already been collected by a Masters student, and the researchers invited me to analyse the data. I subsequently published a paper from this project, which is included in Appendix Eight. While data analysis for this study was taking place, an additional topic became apparent in the focus group discussions around practitioners' beliefs about risk factors for attendance problems, during which mental health problems were raised as a prominent risk factor. Given that the other studies in my thesis focused on quantitative associations between emotional disorder and school absence, I was keen to also include an exploration of the beliefs of professionals who work with CYP day-to-day.

I therefore produced a second paper from this qualitative research, which focused on educational practitioners' beliefs about risk factors for school attendance problems. It is this paper that is presented in Chapter Six. Although the qualitative study is not investigating the subject of my thesis as directly as Studies One to Three, the findings are relevant to the topic as a whole, and this study provides important insights from those who work on the front-line with CYP who are experiencing the difficulties discussed in this thesis. There had been little previous research to explore the views of teachers and other school staff on risk factors for attendance problems, yet these individuals are likely to be among the first to recognise poor or changing patterns of attendance.

Investigating the views of educational practitioners is key in understanding whether the empirical evidence presented in Studies One to Three is reflected in commonly-held beliefs.

2.5.2 Methodology

Qualitative research is well-suited for understanding phenomena within their natural context, revealing links between concepts and behaviours, and exploring the views and experiences of individuals and/or groups (Bradley et al., 2007). Qualitative methods were therefore ideal to explore the views of educational practitioners regarding risk factors for attendance problems. Data were collected via focus groups, which are useful for generating a rich understanding of experiences, encouraging individuals to make collective sense of phenomena, and highlighting both similarities and differences between individual views (Barbour, 2007). The study participants were sixteen practitioners who worked in a variety of roles (including teaching and non-teaching roles) in one of three secondary schools in the South West UK. This study focuses on the views of secondary school practitioners because rates of overall absence are greater in secondary compared to primary schools (Department for Education, 2019c). The moderator analysis presented in Study Two (Chapter Four) also suggested that the relationship between emotional disorder and school absence may be stronger for secondary, compared to primary, school-aged pupils.

I analysed the data using thematic analysis, as described by Braun and Clarke (2006). Thematic analysis is a flexible approach to qualitative analysis that is independent of any particular theoretical or epistemological approach. It aims to identify, analyse and report patterns or “themes” within the data, and allows the data to be organised and described in rich detail (Braun and Clarke, 2006). Further details of the methods used for Study Four are provided in Chapter Six.

2.6 Chapter summary

This chapter has explained the overarching aim of this thesis, namely, to investigate the association between emotional disorder and school absence in CYP. It has provided an overview of the four original research studies that comprise the thesis, and has described the aims, rationale and methodology for

each study. The following four chapters will present findings from these original research studies, as follows:

- Chapter Three: Systematic review (Study One)
- Chapter Four: Quantitative cross-sectional study (Study Two)
- Chapter Five: Quantitative bi-directional study (Study Three)
- Chapter Six: Qualitative study (Study Four)

The evidence from each study will then be brought together and discussed in Chapter Seven (Discussion).

Chapter Three: The association between child and adolescent emotional disorder and poor attendance at school: A systematic review and meta-analysis (Study One)

This chapter presents the objectives, methods and results of a systematic review and meta-analysis undertaken to examine the evidence for an association between emotional disorder and poor attendance at school. The chapter concludes with a discussion of the key findings, their implications, and the strengths and limitations of the study. Two papers have been published from this systematic review, and they are presented in Appendices Three and Four. In order to aid readability and to minimise content overlap, the entire systematic review is presented here in unpublished form.

3.1 Aims and Objectives

The aim of this study was to systematically review the existing evidence for an association between emotional disorder and poor attendance at school, by identifying all quantitative studies reporting on this relationship in school-aged CYP. Two research questions were specified:

(1) Is there an association between child and adolescent emotional disorder and poor attendance at school?
(2) Is this association moderated by between-study characteristics such as the age of the child, type of emotional disorder, somatic symptoms, measurement source (e.g. child-report, parent-report), assessment method (diagnostic tool or measures of continuous symptoms), study setting, or type of school?

3.2 Methods

This systematic review was conducted following best-practice guidelines published by the Centre for Reviews and Dissemination (Centre for Reviews and Dissemination, 2009), and has been reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement (Moher et al., 2009). A protocol was registered on PROSPERO, an international register of systematic reviews (registration CRD42016052961), and was published in a peer-reviewed journal (Finning et al., 2017b) (see Appendix One).

3.2.1 Eligibility criteria

The PICO (Population, Intervention, Comparator, Outcome) framework, commonly used to describe eligibility criteria in systematic reviews of intervention studies, was considered unsuitable for use in this review since there was no intervention being evaluated, no requirement for a specific comparator, and flexibility regarding which variable (emotional disorder or school attendance) was used as the outcome as opposed to the predictor/exposure. Eligibility criteria are therefore described under the following three headings: population, main study variables, and types of studies.

Population

The population of interest was school-aged CYP. The age range was expected to vary between studies, and any age ranges applicable to the education system of the country of study were eligible. Retrospective reports collected during adulthood were excluded, as were studies where the sample was drawn from a sub-population not comparable to the general population or to other study samples, for example those focusing on CYP with a particular health condition, or attending special schools.

Main study variables

Included studies reported on the relationship between emotional disorder and school attendance. Given that both diagnosable emotional disorders and subclinical symptoms have the potential to negatively impact school attendance, studies were eligible if they reported: (a) diagnosis of emotional disorder using a standardised diagnostic measure; (b) symptoms of emotional disorder using a validated scale; and/or (c) formal medical diagnosis. Since there is little consensus in the literature regarding how best to define and measure school attendance (see Section 1.3.1 for a fuller discussion), any terminology and method of measuring attendance was eligible, including quantitative measures of actual attendance and assessment with structured interviews or self-report questionnaires.

Types of studies

Quantitative studies that reported a measure of association between emotional disorder and school attendance were eligible, including population surveys, case-control studies, cross-sectional studies and longitudinal studies. Studies where the primary aim was to evaluate the effectiveness of an intervention were excluded,

because it was considered that samples in such studies would be selective, and that receipt of an intervention might impact the association of interest for this systematic review. Case studies and case series were excluded because these types of studies lack comparator groups. Papers not published in English were excluded due to resource constraints in terms of translation. No restriction was placed on country of study.

3.2.2 Information sources & search strategy

A database search strategy was developed in consultation with an information specialist and experts in the fields of child mental health and education. The search strategy combined terms from four categories: child terms (e.g. child, adolescent, student, pupil); setting terms (e.g. school, education, nursery); attendance terms (e.g. attendance, refusal, truancy, absence); and emotional disorder terms (e.g. emotional disorder, depression, anxiety, internalising/internalizing). Searches used both free text terms and subject headings/controlled vocabulary (e.g. MEDLINE Medical Subject Headings or 'MESH'). The master search strategy for MEDLINE is displayed in Figure 8.

The following electronic databases were searched from date of inception to December 2016:

- MEDLINE (via OvidSP) including Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE Daily and Ovid MEDLINE
- PsycINFO (via OvidSP)
- Education Resources Information Centre (ERIC; via EBSCOhost)
- Education Research Complete (via EBSCOhost)
- British Education Index (via EBSCOhost)
- Australian Education Index (via ProQuest)
- Applied Social Sciences Index and Abstracts (ASSIA; via ProQuest)

Database: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>
Search Strategy:
---
1 child*.tw. (1244742)
2 exp child/ (1803801)
3 adolescen*.tw. (238410)
4 exp Adolescent/ (1893745)
5 student*.tw. (231324)
6 exp Students/ (104268)
7 youth*.tw. (62590)
8 pupil*.tw. (25981)
9 schoolchild*.tw. (12735)
10 (young adj (people or person)).tw. (22633)
11 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 (3434888)
12 ((school* or kindergarten or nursery or education*) adj4 (attend* or non-attend* or refus* or absen* or school phobi* or truan*)).tw. (14958)
13 11 and 12 (12367)
14 (emotional adj (disorder* or distress or symptom*)).tw. (8983)
15 depressi*.tw. (335350)
16 anxi*.tw. (171048)
17 exp anxiety disorder/ (76077)
18 affect* disorder*.tw. (15899)
19 mood disorder*.tw. (14943)
20 exp mood disorder/ (114933)
21 dysthymi*.tw. (3172)
22 bipolar.tw. (57190)
23 agoraphobi*.tw. (3328)
24 panic disorder*.tw. (9212)
25 internalising.tw. (449)
26 internalizing.tw. (7770)
27 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 or 25 or 26 (556214)
28 13 and 27 (1313)
29 limit 28 to english language (1153)

Figure 8. Master search strategy for MEDLINE

It is generally accepted that the inclusion of grey literature (i.e. literature not formally published in sources such as books or journals (Lefebvre et al., 2008)) in a systematic review reduces the impact of publication bias. Therefore, ProQuest Dissertations and Theses (via ProQuest), Health Management Information Consortium (HMIC), Conference Proceedings Citation Index, and the website OpenGrey (http://www.opengrey.eu), were all searched for sources of grey literature. Searches were supplemented with backwards (searching the reference lists of included studies) and forwards (searching articles that have cited included studies) citation chasing using Google Scholar. Known experts in the field and lead authors of all included studies, where contact details could be found, were contacted for any additional sources.

3.2.3 Study selection

Identified studies were exported into EndNote X7 and duplicates were removed. All titles and abstracts were independently screened by myself and one other reviewer, using the pre-specified eligibility criteria described above. Any studies that could not be conclusively excluded from the title and abstract were taken to full text screening. Full texts were then also independently screened by myself and one other reviewer. Disagreements at either stage of screening were first discussed between the two reviewers, and if a decision could still not be reached then they were referred to third and fourth reviewers (PhD supervisors Tamsin Ford and Darren Moore) for a final decision.

3.2.4 Data extraction

I developed a bespoke data extraction form specifically for use in this study, which was pilot tested on three included studies. Minor changes made to the form after pilot testing included the addition of space to describe procedures for the matching of cases and controls in case-control studies, and space to detail extra outcome measures, because some studies reported several measures relevant to this systematic review. Extracted data included study details (author, year of publication, country of study, design, primary aim, population), participant characteristics (sample size, age, gender, ethnicity), details of the methods used to assess emotional disorder and school attendance (name of measure, informant, measure validation),

and study results (effect estimates, 95% confidence intervals, p-values, adjustment for confounding). Data were extracted initially by me and then checked by a second reviewer. Discrepancies were resolved through discussion between reviewers. Where necessary and possible, study authors were contacted to clarify unclear data. Where there were multiple publications from one study, all sources were treated as one and data were extracted concurrently.

3.2.5 Assessment of study quality

Quality assessment was conducted alongside data extraction using the Newcastle-Ottawa Scale (NOS) (Wells, 2008) adapted for the current study (see Appendix Two). A variety of quality assessment tools are available for use with observational studies, and I narrowed these down to the three that I considered most appropriate for use in the current study (NOS; Critical Appraisal Skills Programme [CASP] Checklists; RTI Item Bank). These three tools were pilot tested by me and by a second reviewer on three of the included studies, and the NOS was identified as the best tool, both for ease-of-use and relevance to this systematic review.

The NOS is a widely-used scale designed to assess the quality of observational studies. There are published versions for case-control and cohort studies (Wells, 2008), as well as an adaptation for cross-sectional studies (Herzog et al., 2013). The NOS evaluates studies on the selection of participants, comparability of participant groups, and assessment of the outcome for cohort and cross-sectional studies, or assessment of the exposure for case-control studies. A star-rating system is used to indicate the overall quality of studies, with more stars indicating better study quality (i.e. lower risk of bias). Cohort and case-control studies are awarded a maximum of nine stars, and cross-sectional studies a maximum of eight stars. For the purposes of this systematic review, the cohort version of the NOS was used for any longitudinal studies. One quality assessment was conducted for each study, except in the case of Wiehe (1999) who reported results from both a cross-sectional and nested case-control study, and for which one assessment was completed for each component of the study.

In all three versions of the NOS, the comparability item advises researchers to select the most important factor that studies should control for, and to award one star to

studies controlling for this factor and a second star to studies controlling for any additional factors. For the current review, age and gender were considered to be equally important, as these are both known to be associated with emotional disorder and school attendance. Furthermore, all included studies that controlled for one of these factors also controlled for the other. It was therefore decided to award one star to studies controlling for both age and gender, and a second star to studies controlling for any additional factors. The cross-sectional version of the NOS used a different star-rating system to the case-control and cohort versions on the items regarding assessment of exposure and outcome, so this was amended for use in the current review to ensure consistency of scoring, such that studies of any design using the same method to assess the exposure and/or outcome would be awarded the same score. The full and final versions of the NOS used in the current review can be found in Appendix Two. The quality of each study was taken into consideration during data synthesis but was not used to exclude studies.

3.2.6 Summary measures

Due to heterogeneity in both study design and methods of measuring emotional disorder and school attendance, three types of summary statistic, along with their 95% confidence interval and p-value, are reported. These are: (a) correlation coefficients (r), where studies reported both emotional disorder and school attendance as continuous variables; (b) odds ratios (ORs), where studies reported both emotional disorder and school attendance as binary variables; and (c) standardised mean differences (Cohen's *d*), where studies reported mean scores in each of two groups, for example mean scores on a depressive symptom scale for CYP with good versus poor attendance. The standardised mean difference is the difference between the means of the two groups divided by their pooled standard deviation (Lipsey and Wilson, 2000). It allows direct comparison between studies that use different tools to measure the same underlying construct (e.g. depression). Where summary statistics, confidence intervals and p-values were not reported by studies, these were calculated using an online calculator produced by the Campbell Collaboration (Wilson, 2017) or Stata/SE 14.2 (StataCorp, 2015).

3.2.7 Data analysis and synthesis

Where two or more studies analysed the relationship between the same emotional disorder and school attendance constructs, in comparable populations, and where the same summary statistics were reported or calculated (i.e. correlation coefficient, odds ratio or standardised mean difference), random effects meta-analysis was performed in RevMan v5.3 software (The Cochrane Collaboration, 2014), using the DerSimonian and Laird method (DerSimonian and Laird, 1986). The random effects model was chosen on the assumption that there may be different effect sizes underlying individual studies (Borenstein et al., 2009). Heterogeneity across effect estimates was quantified using the I-squared (I^2) statistic, which is the percentage of total variation across study estimates that is due to heterogeneity rather than sampling variation (Higgins et al., 2003).

When pooling studies that reported correlation coefficients, meta-analysis was performed on Fisher's transformation of the correlation coefficients. This is considered best-practice when performing meta-analysis with correlations because the variance depends strongly on the correlation itself (Borenstein et al., 2009). In these instances, the forest plots show the pooled effect estimate and 95% confidence interval on the transformed scale, and the pooled results are transformed back to correlations for the accompanying narrative. In many cases the correlation coefficients were identical, or very similar, to the transformed coefficient, as is typical when performing Fisher's transformation on small correlation coefficients.

When conducting meta-analysis with odds ratios, RevMan software requires input of the number of participants in each group (i.e. exposed/unexposed; with/without the outcome). However, in some cases studies only reported the percentage of participants in each group and the exact number could not be accurately calculated. In these cases, the log odds ratio and standard error of the log odds ratio were calculated (from the odds ratio and confidence intervals provided in the paper). RevMan performed the meta-analysis on the log odds scale and then back-transformed the results to odds ratios prior to the production of the forest plot, hence the forest plots in these instances show the pooled effect estimate and 95% confidence interval as odds ratios.

Some studies reported multiple results that were applicable to this systematic review. For example, some studies reported multiple results obtained from two or more different statistical approaches (e.g. Hunt and Hopko, 2009), and others reported both adjusted and unadjusted results (e.g. Vaughn et al., 2013). In these cases, for the purposes of meta-analysis, the one result considered most comparable to other studies included in that meta-analysis was selected, and additional results were synthesised narratively. Analyses that adjusted for variables likely to be on the causal pathway between emotional disorder and school attendance (e.g. psychiatric comorbidity) were not included in meta-analyses due to the potential for bias (Schisterman et al., 2009). Meta-analysis was also not appropriate in many cases due to heterogeneity in terms of the population, setting, types of emotional disorder and/or school attendance, and the methods used to measure these constructs.

Results that could not be included in meta-analyses for any reason were synthesised narratively, following the guidance provided by Popay et al. (2006). In addition, effect direction plots were produced in order to provide a visual summary of the results of all studies, using p-values taken directly from papers or calculated as previously described (see Section 3.2.6). Effect direction plots allow complex study data to be summarised visually, regardless of whether standardised effects are available, and allow multiple results from individual studies to be represented in one visual display (Thomson and Thomas, 2013). For the purposes of generating effect direction plots, where individual studies reported multiple outcomes, the method described by Thomson and Thomas (2013) was used to combine results, as follows:

- Where at least 70% of outcomes reported effects in the same direction and with the same level of statistical significance (significant or not significant at the 5% level), the effect direction plots show the effect direction and level of statistical significance as per the majority of outcomes.
- Where fewer than 70% of outcomes reported effects in the same direction, the effect direction plots show conflicting findings.
- Where outcomes were in the same direction but had different levels of statistical significance:
    - If at least 70% of outcomes were statistically significant at the 5% level, the effect direction plots report this as statistically significant;

- If fewer than 70% of outcomes were statistically significant at the 5% level, the effect direction plots report this as not statistically significant.

The protocol for this review stated that subgroup analyses would be performed, if possible, to explore the impact of age, method of measuring emotional disorder, measurement source (e.g. child- versus parent-report), study setting and type of school, on the association between emotional disorder and school attendance. However, there were too few studies for subgroup analyses to be performed. The protocol also specified that publication bias would be assessed using funnel plots and Egger's regression, if possible, but there were insufficient studies to do so (Sterne et al., 2011).

3.3 Results

3.3.1 Study selection

Figure 9 summarises the flow of studies through the review. 4789 sources were identified through database searches and 141 through alternative means (e.g. citation chasing, contact with experts). After exclusion of duplicates, 3086 were title and abstract screened, of which 2847 were excluded, leaving 239 sources for full-text screening. Thirty papers from 29 studies were included in the review, of which 23 were identified through database searches, and seven through citation chasing or contact with experts. Reasons for exclusion at the full-text stage are provided in Figure 9.

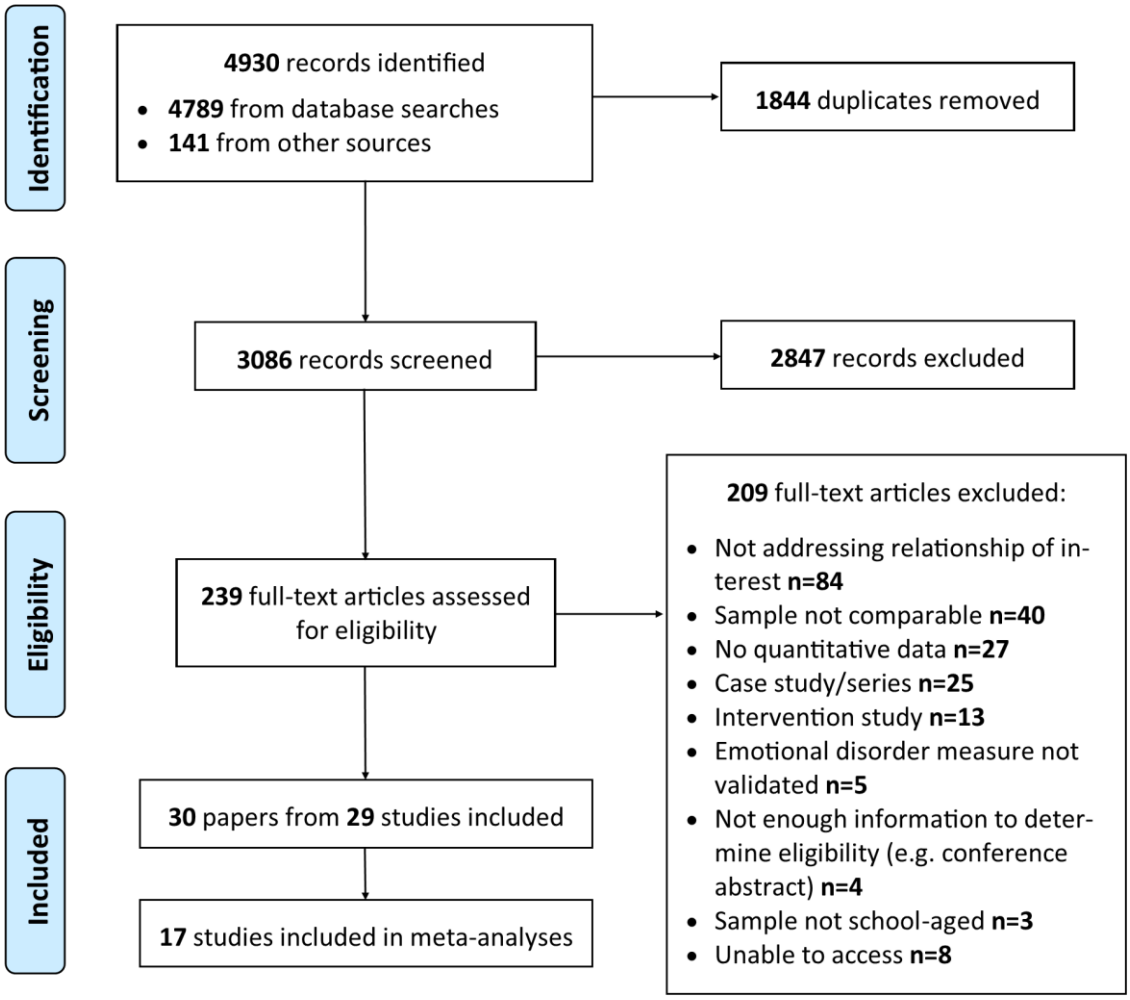

Figure 9. Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) diagram showing flow of studies through the review

3.3.2 Study characteristics

Study characteristics are summarised in Table 3. Studies were published between 1987 and 2016, with only five published prior to 2000 (Bailly et al., 1992; Corville-Smith et al., 1998; Puura et al., 1998; Rosenberg, 1987; Wiehe, 1999). The majority were published journal articles, seven were theses or dissertations (Newman, 2003; Repetto, 2003; Rosenberg, 1987; Thalji, 2010; Tsar, 2011; Wiehe, 1999; Zadeh, 2010) and three were published reports (Green et al., 2005; Meltzer et al., 2003; Meltzer et al., 2000). Newman (2003) and Kingery et al. (2011) were a PhD thesis and journal article, respectively, from the same study. They were extracted as one and will be referred to throughout this chapter as Kingery et al. (2011).

Five studies were population surveys for which participants were recruited from National census, Child Benefit, or hospital records (Green et al., 2005; Meltzer et al., 2003; Meltzer et al., 2000; Puura et al., 1998; Vaughn et al., 2013), two studies recruited participants from clinical settings (Burton et al., 2014; Honjo et al., 2001), one from a social media/advertising campaign (Pflug and Schneider, 2016), and the remaining 21 studies recruited participants via schools. Thirteen studies were conducted in the US (Burton et al., 2014; Egger et al., 2003; Gase et al., 2014; Hunt and Hopko, 2009; Juvonen et al., 2000; Kingery et al., 2011; Repetto, 2003; Rosenberg, 1987; Thalji, 2010; Vaughn et al., 2013; Wiehe, 1999; Wood et al., 2012; Zadeh, 2010), two in Canada (Corville-Smith et al., 1998; Tsar, 2011), three in the UK with participants from England, Scotland and Wales (Green et al., 2005; Meltzer et al., 2003; Meltzer et al., 2000), one in Scotland only (Jones et al., 2009) and the remainder were from 10 different countries across Europe and Asia (see Table 3).

Investigating the relationship between emotional disorder and school attendance was the main, or one of several main aims for 15 studies (Corville-Smith et al., 1998; Egger et al., 2003; Gase et al., 2014; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009; Nik Jaafar et al., 2013; Park et al., 2015; Pflug and Schneider, 2016; Repetto, 2003; Steinhausen et al., 2008; Thalji, 2010; Vaughn et al., 2013; Wiehe, 1999; Wood et al., 2012). Seventeen studies were cross-sectional in design (Bailly et al., 1992; Egger et al., 2003; Gase et al., 2014; Green et al., 2005; Hunt and Hopko, 2009; Ingul et al., 2012; Juvonen et al., 2000; Meltzer et al., 2000; Nik Jaafar et al., 2013; Pflug and Schneider, 2016; Puura et al., 1998; Rosenberg, 1987; Sigfusdottir et al., 2007; Siriwardhana et al., 2013; Tsar, 2011; Vaughn et al., 2013; Zadeh, 2010), seven were longitudinal (Burton et al., 2014; Kingery et al., 2011; Meltzer et al., 2003; Park et al., 2015; Repetto, 2003; Thalji, 2010; Wood et al., 2012), two were case-control (Corville-Smith et al., 1998; Honjo et al., 2001), two were nested case-control (Jones et al., 2009; Steinhausen et al., 2008), and one was a combined cross-sectional and nested case-control study (Wiehe, 1999). The length of follow-up in longitudinal studies ranged from 5 months to 4 years.

Table 3. Summary of study characteristics

Study	Country	Publication status	Design	Emotional disorder & school attendance main aim?	Recruitment Setting	Sample size (% female)	Age in years[a]	Ethnicity
Bailly 1992	France	Journal	CS	N	15 representative, randomly selected high schools from Northern France	728 (41%)	17.2 (1.5) 14 to 23	NR
Burton 2014	US	Journal	LO	N	Two primary care medical clinics, Pennsylvania & Ohio	108 (71%)	16.3 (0.9) T1 14 to 19 T1	59% African-American
Corville-Smith 1998	Canada	Journal	CC	Y (one of)	Two high schools from one small city in Ontario	54 (70%)	15 to 19	NR
Egger 2003	US	Journal	CS	Y	Public schools in 11 counties in North Carolina, taking part in GSMS	1422[b] (44%)	9 to 16	70% White
Gase 2014	US	Journal	CS	Y (one of)	Applications to 1 of 3 high-performing public schools; application open to all youths in catchment area	909 (55%)	16.4	84% Hispanic
Green 2005	UK	Report	CS	N	Children and adolescents living in private households in England, Scotland and Wales, sampled via Child Benefit Records	7621/4689[b] (48%)	5 to 16	86% White[c]
Honjo 2001	Japan	Journal	CC	N	Clinical setting – no further details provided	287 (51%)	14.1 7 to 17	NR
Hunt 2009	US	Journal	CS	Y (one of)	Four high schools in Appalachian mountains	367 (58%)	15.9 (1.4) 14 to 19	94% Caucasian
Ingul 2012	Norway	Journal	CS	Y	One urban and one rural high school	809 (52%)	17.2 (1.2) 16 to 21	NR

Study	Country	Publication status	Design	Emotional disorder & school attendance main aim?	Recruitment Setting	Sample size (% female)	Age in years[a]	Ethnicity
Jones 2009	Scotland	Journal	Nested CC	Y (one of)	Ten representative local authority secondary schools in Edinburgh	184 (60%)	15.0 13 to 16	NR
Juvonen 2000	US	Journal	CS	N	One large public middle school, Los Angeles	178 (55%)	12 to 15	Mixed[d]
Kingery 2011	US	Journal/ Thesis	LO	N	Elementary & middle schools from 6 public school districts, New England	365 (52%)	11.2 T1	99% Caucasian
Meltzer 2000	UK	Report	CS	N	Children and adolescents living in private households in England, Scotland and Wales, sampled via Child Benefit Records	8321/6265[d] (50%)	5 to 15	91% White[e]
Meltzer 2003	UK	Report	LO	N	Young people who had taken part in the 1999 survey (see Meltzer 2000); all of those with disorders in 1999, and a random third of the rest, were invited to take part	1919 (NR)	8 to 16	NR
Nik Jaafar 2013	Malaysia	Journal	CS	Y (one of)	Three high-risk schools in inner city area, Kuala Lumpur[f]	373 (43%)	16	63% Malay
Park 2015	South Korea	Journal	LO	Y	Participants expected to enter primary school in next 2 months, from 34 kindergartens in Seoul	248 (48%)	6 to 7 T1	NR

Study	Country	Publication status	Design	Emotional disorder & school attendance main aim?	Recruitment Setting	Sample size (% female)	Age in years[a]	Ethnicity
Pflug 2016	Germany	Journal	CS	Y (one of)	Social network, advert in journal for teachers & Facebook profile; open to all secondary-aged students in Germany	977/1140[g] (47%)	15.1 (2.3) 10 to 21	NR
Puura 1998	Finland	Journal	CS	N	Representative sample of all children born in Finland in 1981, recruited via sampling at town- and district-level	5686 (49%)	8 to 9	NR
Repetto 2003	US	Thesis	LO	Y (one of)	Four public high schools in Flint, Michigan	602 (52%)	14.5 (0.6) T1 14 to 17 T1	100% African-American
Rosenberg 1987	US	Thesis	CS	N	Two school districts in Ohio	274 (53%)	8 to 11	NR
Sigfusdottir 2007	Iceland	Journal	CS	N	All Icelandic secondary schools in March 2000	5810 (52%)	14 to 15	NR
Siriwardhana 2013	Sri Lanka	Journal	CS	N	Students selected via a stratified random sample at school- and individual-level	1505 (50%)	13.7 (1.3) 12 to 17	87% Sinhala
Steinhausen 2008	Switzerland	Journal	Nested CC	Y (one of)	158 schools in Zurich, taking part in ZAPPS study	146 at T1[h] 274 at T2 (62%)	13.7 T1 17.1 T2	NR
Thalji 2010	US	Thesis	LO	Y (one of)	One large public middle school, South-Eastern US	300 (59%)	11 to 14 T1	55% Caucasian at T1
Tsar 2011	Canada	Thesis	CS	N	50 randomly selected schools in large district school board, Ontario	715 (53%)	10.4 (0.5)	71% Caucasian

Study	Country	Publication status	Design	Emotional disorder & school attendance main aim?	Recruitment Setting	Sample size (% female)	Age in years[a]	Ethnicity
Vaughn 2013	US	Journal	CS	Y (one of)	Representative sample of US youth selected through multistage area probability sampling (NSDUH study)	13056 (49%)	14.6 (1.7)	59% White
Wiehe 1999	US	Thesis	CS / Nested CC	Y (one of)	Two urban high schools in one Mid-Western US school district	140/30/14[i] (54%)	11 to 12	65% Caucasian
Wood 2012	US	Journal	LO	Y (one of)	Stratified random sample of all US secondary schools (AddHealth study)	14428 (50%)	12 to 18 T1	67% White
Zadeh 2010	US	Thesis	CS	N	Students from 10 locations across US, taking part in NICHD SECCYD study	776 (51%)	11 to 12	NR

CC – Case-control; CS – Cross-sectional; GSMS – Great Smoky Mountains Study; LO – Longitudinal; N – no; NA – not applicable; NR – not reported; NICHD SECCYD – National Institute of Child Health and Human Development Study of Early Child Care and Youth Development; NSDUH – National Survey on Drug Use and Health; T1 = time-point one; T2 = time-point two; Y – yes; ZAPPS – Zurich Adolescent Psychology and Psychopathology Study.

[a] Age is reported here as mean (standard deviation) and/or range, as provided by included studies.

[b] Egger 2003 aggregated data from multiple time waves and thus analysed 6676 observations from 1,422 participants.

[c] Green 2005 had total sample of 7,977, of which school attendance data available for 7,621 and 4,689 using parent- and teacher-reports, respectively; gender and ethnicity distribution refers to entire 7,977 sample.

[d] Juvonen 2000: sample ethnicity was 23% Chicano/Latino, 18% African-American, 16% Middle Eastern, 13% European American, 12% Asian American, 11% Multiracial/other.

[e] Meltzer 2000 had total sample of 10,438, of which 8,321 and 6,265 had truancy and absenteeism data, respectively; gender and ethnicity distribution refers to entire 10,438 sample.

[f] Nik Jaafar 2013: High risk schools were those with high rates of disciplinary problems and/or located in high-risk areas.

[g] Pflug 2016 had total sample of 1,359, of which 1,140 had Kinder-DIPS and 977 SDQ data; gender distribution refers to entire 1,359 sample.

[h] Steinhausen 2008 used nested case-control design at two time-points within a larger longitudinal study; gender distribution was identical at T1 and T2.

[i] Wiehe 1999 sample sizes reflect cross-sectional and nested case-control studies one and two, respectively; gender distribution relates to cross-sectional sample of 140.

Sample sizes ranged from 14 to 14,428, and the total number of participants from all studies combined was 67,709. Age, where reported, was provided as a mean, range, or both, with mean age ranging from 10.4 to 17.2 years, covering pupils aged from five to 23 years. Three studies (Bailly et al., 1992; Ingul et al., 2012; Pflug and Schneider, 2016) included participants above the age of 20, but since all three specified that this age-range was representative of the school-aged population in the country of study, they were included. All studies were mixed gender and the percentage of females ranged between 41% and 71%. Ten study samples were predominantly (>50%) Caucasian (Egger et al., 2003; Green et al., 2005; Hunt and Hopko, 2009; Kingery et al., 2011; Meltzer et al., 2000; Thalji, 2010; Tsar, 2011; Vaughn et al., 2013; Wiehe, 1999; Wood et al., 2012), two predominantly African-American (Burton et al., 2014; Repetto, 2003) one each were predominantly Hispanic (Gase et al., 2014), Sinhala (Siriwardhana et al., 2013) and Malay (Nik Jaafar et al., 2013), and one was highly mixed (Juvonen et al., 2000). Ethnicity was not reported in the remaining 13 studies.

3.3.3 Assessment of emotional disorder & school attendance

Assessment of emotional disorder

Twenty-six studies reported concurrent associations between emotional disorder and school attendance (Bailly et al., 1992; Corville-Smith et al., 1998; Egger et al., 2003; Gase et al., 2014; Green et al., 2005; Honjo et al., 2001; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009; Juvonen et al., 2000; Kingery et al., 2011; Meltzer et al., 2003; Meltzer et al., 2000; Nik Jaafar et al., 2013; Pflug and Schneider, 2016; Puura et al., 1998; Repetto, 2003; Rosenberg, 1987; Sigfusdottir et al., 2007; Siriwardhana et al., 2013; Steinhausen et al., 2008; Thalji, 2010; Tsar, 2011; Vaughn et al., 2013; Wiehe, 1999; Zadeh, 2010). Using longitudinal data, seven studies reported the association between emotional disorder and subsequent school attendance (Burton et al., 2014; Kingery et al., 2011; Meltzer et al., 2003; Park et al., 2015; Repetto, 2003; Thalji, 2010; Wood et al., 2012), and three reported the association between school attendance and subsequent emotional disorder (Kingery et al., 2011; Repetto, 2003; Wood et al., 2012).

Table 4 summarises the emotional disorder constructs, assessment tools and measurement sources used by the included studies. Nineteen studies reported a measure of depression (Bailly et al., 1992; Burton et al., 2014; Egger et al., 2003; Gase et al., 2014; Green et al., 2005; Honjo et al., 2001; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009; Juvonen et al., 2000; Kingery et al., 2011; Puura et al., 1998; Repetto, 2003; Rosenberg, 1987; Sigfusdottir et al., 2007; Tsar, 2011; Vaughn et al., 2013; Wood et al., 2012; Zadeh, 2010), eleven reported anxiety (Burton et al., 2014; Corville-Smith et al., 1998; Egger et al., 2003; Green et al., 2005; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009; Park et al., 2015; Pflug and Schneider, 2016; Tsar, 2011; Vaughn et al., 2013), and thirteen reported a measure of "emotional difficulties", which incorporated both anxiety and depression (Green et al., 2005; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009; Meltzer et al., 2003; Meltzer et al., 2000; Nik Jaafar et al., 2013; Park et al., 2015; Pflug and Schneider, 2016; Siriwardhana et al., 2013; Steinhausen et al., 2008; Thalji, 2010; Wiehe, 1999). Four studies included a measure of all three constructs (Green et al., 2005; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009).

Nineteen studies reported a continuous measure of emotional symptoms using a validated scale (Burton et al., 2014; Corville-Smith et al., 1998; Honjo et al., 2001; Hunt and Hopko, 2009; Ingul et al., 2012; Juvonen et al., 2000; Kingery et al., 2011; Nik Jaafar et al., 2013; Park et al., 2015; Pflug and Schneider, 2016; Repetto, 2003; Rosenberg, 1987; Sigfusdottir et al., 2007; Steinhausen et al., 2008; Thalji, 2010; Tsar, 2011; Wiehe, 1999; Wood et al., 2012; Zadeh, 2010), five reported emotional disorder as a binary variable by using a cut-off on a continuous scale (Gase et al., 2014; Jones et al., 2009; Puura et al., 1998; Siriwardhana et al., 2013; Wiehe, 1999), and seven reported a binary variable using a standardised diagnostic interview (Bailly et al., 1992; Egger et al., 2003; Green et al., 2005; Jones et al., 2009; Meltzer et al., 2003; Meltzer et al., 2000; Park et al., 2015). Two studies used "other" methods: Vaughn et al. (2013) reported whether CYP had a history of diagnosis by a medical professional, and Pflug and Schneider (2016), in addition to their continuous measure of emotional difficulties, also created binary variables based on answers to screening questions from a diagnostic interview (see Table 4).

Table 4. Assessment of emotional disorder

Construct	Measure	Measurement source	Studies
DEPRESSION			
Continuous	Behavior Assessment System for Children, 2nd Edition (BASC-2) *[depression]* [a] - suicide question removed	YP	Tsar (2011)
	Brief Symptom Inventory (BSI)	YP	Repetto (2003)
	Child Depression Inventory (CDI)	YP	Honjo (2001); Rosenberg (1987)
	Child Depression Inventory (CDI) – suicide question removed	YP	Juvonen (2000); Kingery (2011)
	Child Depression Inventory (CDI) short-form	YP	Zadeh (2010)
	Center for Epidemiologic Studies Depression Scale (CES-D)	YP	Burton (2014); Wood (2012)
	Peer Nomination Inventory of Depression (PNID)	Peers	Repetto (2003)
	Symptom Distress Checklist (SDC)	YP	Sigfusdottir (2007)
	Short Moods and Feelings Questionnaire (SMFQ)	YP	Ingul (2012)
	Teacher Rating of Depression (TRD)	Teacher	Repetto (2003)
	Youth Self-Report (YSR) *[withdrawn/depressed]*	YP	Hunt (2009)
Cut-off [b]	Child Depression Inventory (CDI) – suicide question removed	YP	Puura (1998)
	Center for Epidemiologic Studies Depression Scale (CES-D)	YP	Gase (2014)
Diagnostic	Child and Adolescent Psychiatric Assessment (CAPA)	YP; parent	Egger (2003)
	Development and Wellbeing Assessment (DAWBA)	YP; parent; teacher	Green (2005)
	Diagnostic Interview Schedule for Children (DISC)	YP	Jones (2009)
	Interview for Diagnostic and Statistical Manual for Mental Disorders Version III - Research Edition (DSM-III-R)	NR	Bailly (1992)
Other	History of diagnosis by medical professional	YP	Vaughn (2013)
ANXIETY			
Continuous	Behavior Assessment System for Children, 2nd Edition (BASC-2) *[anxiety]*	YP	Tsar (2011)
	Screen for Child Anxiety Related Emotional Disorder Screen for Child Anxiety Related Emotional Disorder (SCARED)	YP	Burton (2014); Ingul (2012)
	State-Trait Anxiety Inventory Child version (STAI-C)	YP	Park (2015)
	What I Think and Feel Scale	YP	Corville-Smith (1998)

Construct	Measure	Measurement source	Studies
	Youth Self-Report (YSR) *[anxiety]*	YP	Hunt (2009)
Diagnostic	Child and Adolescent Psychiatric Assessment (CAPA) *[SAD, GAD, simple phobia, social phobia, panic]*	YP; parent	Egger (2003)
	Development and Wellbeing Assessment (DAWBA) *[SAD, GAD, specific phobia]*	YP; parent; teacher	Green (2005)
	Diagnostic Interview Schedule for Children (DISC) *[Any anxiety disorder]*	YP	Jones (2009)
	Interview for Diagnostic and Statistical Manual for Mental Disorders Version Four (DSM-IV) *[SAD]*	Parent	Park (2015)
Other	History of diagnosis of anxiety disorder by medical professional	YP	Vaughn (2013)
	Screening Questions for the Kinder-DIPS Diagnostic Interview *[SAD, GAD, social phobia, panic, agoraphobia; total number answered yes]*	YP	Pflug (2016)
EMOTIONAL DIFFICULTIES			
Continuous	Child Behavior Checklist (CBCL) [*internalising]*	Parent	Park (2015)
	Screen for Child Anxiety Related Emotional Disorder (SCARED)	YP	Hunt (2009)
	Strengths and Difficulties Questionnaire (SDQ) *[emotional difficulties]*	YP	Pflug (2016)
	Short Moods and Feelings Questionnaire (SMFQ)	YP	Hunt (2009)
	Youth Self-Report (YSR) *[internalising]*	YP	Hunt (2009); Nik Jaafar (2013); Steinhausen (2008); Thalji (2010); Wiehe (1999)
	Youth Self-Report (YSR) *[withdrawn, anxious/depressed]*	YP	Steinhausen (2008)
Cut-off	Strengths and Difficulties Questionnaire (SDQ) *[emotional difficulties]*	YP	Siriwardhana (2013)
	Strengths and Difficulties Questionnaire (SDQ) *[emotional difficulties]*	Parent	Jones (2009)
	YSR *[internalising]*	YP	Wiehe (1999)
Diagnostic	Development and Wellbeing Assessment (DAWBA) *[any emotional disorder]*	YP; parent; teacher	Green (2002); Meltzer (2000; 2003)
	Diagnostic Interview Schedule for Children (DISC) *[any emotional disorder]*	YP	Jones (2009)

[a] Italicised text in square brackets highlights subscales taken from a larger scale to measure the construct of interest.
[b] Cut-off refers to studies that created a binary variable using a cut-off or threshold on a continuous scale.
GAD = generalised anxiety disorder; NR = not reported; SAD = separation anxiety disorder; YP = young person.

Assessment of school attendance

As demonstrated in Table 5, there were substantial inconsistencies in the ways in which school attendance was described and measured across studies, such that studies reporting to be studying the same concept did not always measure the concept in a comparable way and, conversely, studies claiming to measure different constructs sometimes used identical methods of measurement. For example, five studies measured school attendance using self-reported frequency/number of classes skipped or cut, but two of these studies (Repetto, 2003; Sigfusdottir et al., 2007) referred to this as a measure of absenteeism and three (Gase et al., 2014; Steinhausen et al., 2008; Vaughn et al., 2013) described it as a measure of truancy. Additionally, some studies used terminology that was inconsistent with their method of measurement. For example, Pflug and Schneider (2016) described their study as an investigation of school absenteeism, yet an "absentee" was any pupil who self-reported missing any school in the past seven days not due to a special event, illness or injury, which is more consistent with the concept of "unexcused absences" than with absenteeism in general.

Table 6 summarises the school attendance constructs, assessment tools and measurement sources. For the purposes of data synthesis school attendance was grouped into four overarching constructs: (a) absenteeism, i.e. absence for any reason; (b) excused/medical absences; (c) unexcused absences/truancy; (d) school refusal/school fear (see Section 1.3.1 for a detailed discussion of school attendance terminology). These absence categories were mutually exclusive, such that any one result was included in only one absence category. Where there were discrepancies between what the study reported to be measuring and what was actually measured, the measurement method itself was used to inform the grouping of studies.

Using the four school attendance constructs described above, eleven studies measured absenteeism (Green et al., 2005; Juvonen et al., 2000; Kingery et al., 2011; Meltzer et al., 2003; Meltzer et al., 2000; Puura et al., 1998; Siriwardhana et al., 2013; Thalji, 2010; Tsar, 2011; Wood et al., 2012; Zadeh, 2010), three measured excused or medical absences (Burton et al., 2014; Jones et al., 2009; Rosenberg, 1987), seventeen measured unexcused absences or truancy (Bailly

et al., 1992; Burton et al., 2014; Corville-Smith et al., 1998; Egger et al., 2003; Gase et al., 2014; Green et al., 2005; Hunt and Hopko, 2009; Ingul et al., 2012; Meltzer et al., 2000; Nik Jaafar et al., 2013; Pflug and Schneider, 2016; Puura et al., 1998; Repetto, 2003; Sigfusdottir et al., 2007; Steinhausen et al., 2008; Vaughn et al., 2013; Wiehe, 1999) and four measured school refusal or school fear (Egger et al., 2003; Honjo et al., 2001; Park et al., 2015; Steinhausen et al., 2008). In addition to measuring school refusal and truancy, Egger (2003) reported a third category of mixed school refusal/truancy, for pupils meeting criteria for both.

School attendance was reported as a continuous variable in thirteen studies (Bailly et al., 1992; Burton et al., 2014; Hunt and Hopko, 2009; Ingul et al., 2012; Juvonen et al., 2000; Kingery et al., 2011; Repetto, 2003; Rosenberg, 1987; Thalji, 2010; Tsar, 2011; Wiehe, 1999; Wood et al., 2012; Zadeh, 2010), a binary variable in fourteen (Corville-Smith et al., 1998; Egger et al., 2003; Green et al., 2005; Honjo et al., 2001; Jones et al., 2009; Meltzer et al., 2003; Meltzer et al., 2000; Nik Jaafar et al., 2013; Park et al., 2015; Pflug and Schneider, 2016; Puura et al., 1998; Siriwardhana et al., 2013; Steinhausen et al., 2008; Wiehe, 1999), and an ordinal variable in four (Gase et al., 2014; Ingul et al., 2012; Sigfusdottir et al., 2007; Vaughn et al., 2013) (see Table 6).

In terms of measurement source, twelve studies used data from official school attendance records (Corville-Smith et al., 1998; Hunt and Hopko, 2009; Ingul et al., 2012; Jones et al., 2009; Juvonen et al., 2000; Kingery et al., 2011; Nik Jaafar et al., 2013; Siriwardhana et al., 2013; Thalji, 2010; Tsar, 2011; Wiehe, 1999; Zadeh, 2010), ten used child-reported absences (Bailly et al., 1992; Burton et al., 2014; Egger et al., 2003; Gase et al., 2014; Pflug and Schneider, 2016; Repetto, 2003; Sigfusdottir et al., 2007; Steinhausen et al., 2008; Vaughn et al., 2013; Wood et al., 2012), six used parent reports (Egger et al., 2003; Green et al., 2005; Meltzer et al., 2003; Park et al., 2015; Puura et al., 1998; Rosenberg, 1987), three used teacher reports (Green et al., 2005; Meltzer et al., 2000; Puura et al., 1998), and one used a researcher assessment of school refusal, although details regarding this process were unclear (Honjo et al., 2001).

Table 5. Terminology versus measurement of school attendance

What was actually measured	Terminology used by studies				
	Absenteeism	**Medical absences**	**Truancy**	**School fear**	**School refusal**
Total absences	Corville-Smith (1998), Green (2005), Juvonen (2000), Kingery (2011), Meltzer (2000; 2003), Puura (1998), Siriwardhana (2013), Thalji (2010), Tsar (2011), Wood (2012) , Zadeh (2011)	-	-	-	-
Medical absences	Rosenberg (1987)	Jones (2009)	-	-	-
Excused absences	Burton (2014)	-	-	-	-
Unexcused absences	Burton (2014), Ingul (2012), Pflug (2016)	-	Green (2005), Hunt (2009), Nik Jaafar (2013), Wiehe (1999)	-	-
Truancy (descriptive assessment)	-	-	Bailly (1992), Egger (2003), Puura (1998)	-	-
Number of classes skipped/cut	Repetto (2003), Sigfusdottir (2007)	-	Gase (2014), Steinhausen (2008), Vaughn (2013)	-	-
School fear (single questionnaire item)	-	-	-	Steinhausen (2008)	-
School refusal (descriptive assessment)	-	-	-	-	Egger (2003), Honjo (2001), Park (2015)

Table 6. Assessment of school attendance

Construct	Measure	Measurement source	Studies
ABSENTEEISM			
Continuous	Number of hours absent during one semester	School records	Juvonen (2000)
	Number of days absent at end of third term	School records	Tsar (2011)
	Number of days attended school in one school year	School records	Zadeh (2010)
	Number of days absent divided by total available days in half of school year (T1), or entire school year (T2)	School records	Kingery (2011)
	Ratio of number of days missed to total possible days in one term (T1), entire school year (T2)	School records	Thalji (2010)
	Estimate of total annual absences by combining self-reported excused (scored on scale from 0 to 10 or more) and unexcused (open-ended numeric response) absences	Young person	Wood (2012)
Binary	Missing >20% school days in one school year	School records	Siriwardhana (2013)
	Whether the child has missed school for any reason in the past term	Parent	Green (2005); Meltzer (2003)
	Whether the child has missed school for any reason in the past term	Teacher	Meltzer (2000)
	Questionnaire item “often absent from school” answered one (applies to some extent) or two (certainly applies)	Teacher	Puura (1998)
EXCUSED/MEDICAL ABSENCES			
Continuous	Number of excused (e.g. illness, travel) absences in previous 6 months on scale from 0 (never) to 3 (>10 times)	Young person	Burton (2014)
	Number of days absent due to illness by asking caregiver every two weeks for 6 months	Parent	Rosenberg (1989)
Binary	>20% absence for medical reasons over three consecutive terms	School records	Jones (2009)
UNEXCUSED ABSENCES/TRUANCY			
Continuous	Single undescribed truancy item on an unspecified questionnaire	Young person	Bailly (1992)
	Number of unexcused absences (i.e. not due to illness, travel) in previous 6 months on scale from 0 (never) to 3 (>10 times)	Young person	Burton (2014)
	Number of unexcused absences for school year	School records	Hunt (2009)

Construct	Measure	Measurement source	Studies
	Day/hours absent in 15 week period, for which reason for absence not provided or not accepted by school	School records	Ingul (2012)
	Number of days skipped/cut on a 7-point scale from 0 to >11 days, and number of classes skipped/cut on a 6-point scale from 0 to >20, (individual categories not reported) transformed to z-scores and combined	Young person	Repetto (2003)
	Number of absences in school year not approved by school/parent	School records	Wiehe (1999)
Ordinal	Frequency of skipped classes on scale from 1 (almost never) to 5 (almost daily)	Young person	Sigfusdottir (2007)
	Questionnaire item “In a typical month, I cut or skip class…”, answered 1-2 times (infrequent truant) or ≥ 3 times (chronic truant)	Young person	Gase (2014)
	Day/hours absent in 15 week period, for which reason for absence not provided or not accepted by school, categorised into high (≥13.5 days), normal (1.5-13.5 days) or no absence (<1.5 days)	School records	Ingul (2012)
	No. days skipped in last 30 days categorised into none (0 days), moderate skipping (1-3 days) or high skipping (≥4 days)	Young person	Vaughn (2013)
Binary	Missing ≥ 15 classes in one course during Fall semester or ≥ 10 classes in one course by middle of Winter semester, not due to illness or injury	School records	Corville-Smith (1998)
	Skipping ≥ ½ day in last three months, staying home in the morning, having to be taken to school to ensure arrival, and/or failing to reach school or leaving early, not due to anxiety or emotional disturbance	Young person; parent	Egger (2003)
	Whether the child had any unauthorised absences in the past term	Teacher	Green (2005)
	Questionnaire item “plays truant” answered somewhat true or certainly true	Teacher	Meltzer (2000)
	≥ 20 days absent for school year without verbal or written reason from parent or doctor	School records	Nik Jaafar (2013)
	Missed any time in last 7 days, not due to special event, illness or injury, and answered yes to the question “Do you frequently stay away from school?”	Young person	Pflug (2016)
	Questionnaire item “truants from school” answered one (occasionally/mild) or two (frequent/severe)	Parent; teacher	Puura (1998)
	Questionnaire item “I cut classes or skip school” scored two (very true or often true)	Young person	Steinhausen (2008)
	≥ 5 unexcused absences in school year, not approved by school/parent	School records	Wiehe (1999)
	Number of unexcused absences in school year > 2 SD from mean, not approved by school/parent	School records	Wiehe (1999)

Construct	Measure	Measurement source	Studies
SCHOOL REFUSAL/FEAR			
Binary	Nonattendance ≥ ½ day in last three months, staying home in the morning, failing to reach school or leaving early, and/or having to be taken to school to ensure arrival, because of worry/anxiety	Young person; parent	Egger (2003)
	Meeting Berg's criteria for school refusal: remained home with knowledge of parents, absence of severe antisocial behaviour, parents have taken reasonable measures to solicit attendance, and child is emotionally disturbed at prospect of attendance	Researcher	Honjo (2001)
	Meeting Berg's criteria for school refusal: nonattendance ≥ ½ day in last three months, failing to reach school or leaving early on at least 7 days in previous three months, and/or difficulty attending school for at least two weeks, causing interference with daily routine	Parent	Park (2015)
	Questionnaire item "I am afraid of going to school" scored 2 (very true or often true)	Young person	Steinhausen (2008)

SD = standard deviation; T1 = time-point one; T2 = time-point two.

3.3.4 Quality assessment of included studies

Tables 7 to 9 report the results of quality assessment for cross-sectional, longitudinal and case-control studies, respectively.

Quality assessment for cross-sectional studies

Overall, the 18 cross-sectional studies were of poor-to-moderate quality (see Table 7). The lowest quality study was Rosenberg (1987) which scored zero on the NOS, and the highest quality study was Egger et al. (2003) which scored six, both out of a maximum possible score of eight. Common issues included a lack of justification of sample sizes and no description of non-respondents, and statistics were often inappropriate and/or poorly reported.

Sixteen studies utilised a sample that was truly or somewhat representative of the target population (Bailly et al., 1992; Egger et al., 2003; Gase et al., 2014; Green et al., 2005; Hunt and Hopko, 2009; Ingul et al., 2012; Juvonen et al., 2000; Meltzer et al., 2000; Pflug and Schneider, 2016; Puura et al., 1998; Sigfusdottir et al., 2007; Siriwardhana et al., 2013; Tsar, 2011; Vaughn et al., 2013; Wiehe, 1999; Zadeh, 2010). Despite many studies with large sample sizes, only two (Nik Jaafar et al., 2013; Zadeh, 2010) provided the justification/sample size calculations required to be awarded a star for this item. Only one study (Ingul et al., 2012) had both a high response rate and established comparability between respondents and non-respondents. Four studies used structured clinical interviews for the assessment of emotional disorder (Bailly et al., 1992; Egger et al., 2003; Green et al., 2005; Meltzer et al., 2000); the remainder used self-reports, which are considered by the NOS to be an indicator of lower study quality. Seven studies (Egger et al., 2003; Gase et al., 2014; Green et al., 2005; Hunt and Hopko, 2009; Meltzer et al., 2000; Siriwardhana et al., 2013; Vaughn et al., 2013) controlled for age, gender and at least one other variable and were therefore awarded a star for “comparability”.

Nine studies were deemed to be of higher quality in terms of the assessment of school attendance, either because they used a structured interview (Egger et al., 2003) or obtained attendance data from official school records (Hunt and Hopko, 2009; Ingul et al., 2012; Juvonen et al., 2000; Nik Jaafar et al., 2013; Siriwardhana et al., 2013; Tsar, 2011; Wiehe, 1999; Zadeh, 2010); the remainder used self-, parent-

or teacher-reported attendance. Five studies (Egger et al., 2003; Gase et al., 2014; Nik Jaafar et al., 2013; Siriwardhana et al., 2013; Vaughn et al., 2013) used an appropriate statistical technique reported in full with p-values and confidence intervals. A further four studies (Hunt and Hopko, 2009; Ingul et al., 2012; Pflug and Schneider, 2016; Zadeh, 2010) used appropriate tests that were generally well-reported, but the failure to include confidence intervals lowered their score on the NOS assessment.

Quality assessment for longitudinal studies

The seven longitudinal studies were of poor-to-moderate quality overall (see Table 8). The lowest quality study was Burton et al. (2014), which scored two out of a maximum possible score of nine on the NOS, and the highest quality studies were Meltzer et al. (2003) and Park et al. (2015), which both scored six out of nine. The majority of studies used self-report measures for emotional disorder and/or school attendance, did not control for confounders, and did not demonstrate that the outcome of interest was not present at the start of the study.

Five longitudinal studies utilised samples that were truly or somewhat representative of the target population (Kingery et al., 2011; Meltzer et al., 2003; Park et al., 2015; Thalji, 2010; Wood et al., 2012). All studies selected non-exposed participants from the same community as the exposed cohort. Two studies used a structured diagnostic assessment to assess emotional disorder (Meltzer et al., 2003; Park et al., 2015); the remainder used self-report measures, which are considered by the NOS to be an indicator of lower study quality. Park et al. (2015) was the only study to demonstrate that the outcome (school refusal) was not present at the start of the study, by virtue of the fact that the baseline assessment was conducted prior to children starting school.

Only Meltzer et al. (2003) controlled for age and gender and at least one other confounder; the remainder did not control for age or gender. Wood et al. (2012) reported secondary data analyses of three datasets, of which only one was relevant to the current review; across the three datasets age, gender, race, parental education level, family structure and family income were controlled for, but the paper did not specify which of these were controlled for in the AddHealth dataset used in the

current review, hence it could not be awarded a star for this item. Two studies assessed school attendance using data from official school records (Kingery et al., 2011; Thalji, 2010); the remaining five used self-reports. All studies had a follow-up period considered to be long enough for outcomes to occur (ranging from five months to four years). Burton et al. (2014) and Wood et al. (2012) reported follow-up outcomes on 55% and 70% of the original study samples, respectively. The remaining studies had follow-up data on at least 85% of participants and were awarded a star for "adequacy of follow-up" (see Table 8).

Quality assessment for case-control studies

The quality of the five case-control studies was mixed, although these studies scored higher on the NOS quality assessment on average, compared to the cross-sectional and longitudinal studies (see Table 9). Scores ranged from one out of nine (Honjo et al., 2001) to seven out of nine (Corville-Smith et al., 1998; Jones et al., 2009). All studies used the same method to assess the exposure variable for cases and controls, and most selected representative samples of cases and controls, and controlled for at least age and gender in study design or analysis. Common issues were use of self-report measures rather than diagnostic measures of emotional disorder, and lack of description of response rates or indication that response rates were different for cases compared to controls.

Three case-control studies used data from school attendance records to define cases (Corville-Smith et al., 1998; Jones et al., 2009; Wiehe, 1999); the other two used self-reported attendance. Four used a consecutive or obviously representative series of cases, with controls selected from the same community (Corville-Smith et al., 1998; Jones et al., 2009; Steinhausen et al., 2008; Wiehe, 1999). The method used for selecting cases in the study by Honjo et al. (2001) was unclear, and although not captured by any items on the NOS it is worth noting that the age of cases (7 to 17 years) was markedly different to that of controls (12 to 15 years).

Table 7. Results of quality assessment for cross-sectional studies

	Selection				Comparability	Outcome		
STUDY	**Representative -ness**	**Sample size**	**Non-respondents**	**Ascertainment of emotional disorder**	**Comparability**	**Assessment of school attendance**	**Statistical test**	**TOTAL (out of 8)**
Rosenberg 1987	-	-	-	-	-	-	-	0
Pflug 2016	+	-	-	-	-	-	-	1
Puura 1998	+	-	-	-	-	-	-	1
Sigfusdottir 2007	+	-	-	-	-	-	-	1
Bailly 1992	+	-	-	+		-	-	2
Juvonen 2000	+	-	-	-	-	+	-	2
Tsar 2011	+	-	-	-	-	+	-	2
Wiehe 1999	+	-	-	-	-	+	-	2
Ingul 2012	+	-	+	-	-	+	-	3
Nik Jaafar 2013	-	+	-	-	-	+	+	3
Zadeh 2010	+	+	-	-	-	+	-	3
Gase 2014	+	-	-	-	++	-	+	4
Green 2005	+	-	-	+	++	-	-	4
Hunt 2009	+	-	-	-	++	+	-	4
Meltzer 2000	+	-	-	+	++	-	-	4
Vaughn 2013	+	-	-	-	++	-	+	4
Siriwardhana 2013	+	-	-	-	++	+	+	5
Egger 2003	+	-	-	+	++	+	+	6

+ One star awarded as per the NOS rating scale; ++ two stars awarded as per the NOS rating scale; - no stars awarded as per the NOS rating scale. A higher score reflects greater study quality (i.e. lower risk of bias).

Table 8. Results of quality assessment for longitudinal studies

	Selection				Comparability	Outcome			
STUDY	**Representative-ness of exposed**	**Selection of non-exposed**	**Ascertainment of exposure**	**Outcome not present at start**	**Comparability**	**Ascertainment of outcome**	**Length of follow-up**	**Adequacy of follow-up**	**TOTAL (out of 9)**
Burton 2014	-	+	-	-	-	-	+	-	2
Repetto 2003	-	+	-	-	-	-	+	+	3
Wood 2012	+	+	-	-	-	-	+	-	3
Kingery 2011	+	+	-	-	-	+	+	+	5
Thalji 2010	+	+	-	-	-	+	+	+	5
Meltzer 2003	+	+	+	-	++	-	+	-	6
Park 2015	+	+	+	+	-	-	+	+	6

+ One star awarded as per the NOS rating scale; ++ two stars awarded as per the NOS rating scale; - no stars awarded as per the NOS rating scale. A higher score reflects greater study quality (i.e. lower risk of bias).

Table 9. Results of quality assessment for case-control studies

	Selection				Comparability	Exposure			
STUDY	**Definition of cases**	**Representative-ness of cases**	**Selection of controls**	**Definition of controls**	**Comparability**	**Ascertainment of exposure**	**Same method of ascertainment**	**Non-response rate**	**TOTAL (out of 9)**
Honjo 2001	-	-	-	-	-	-	+	-	1
Steinhausen 2008	-	+	+	-	+	-	+	-	4
Wiehe 1999	+	+	+	+	+	-	+	-	6
Corville-Smith 1998	+	+	+	+	++	-	+	-	7
Jones 2009	+	+	+	+	++	-	+	-	7

+ One star awarded as per the NOS rating scale; ++ two stars awarded as per the NOS rating scale; - no stars awarded as per the NOS rating scale. A higher score reflects greater study quality (i.e. lower risk of bias).

Corville-Smith et al. (1998) and Jones et al. (2009) controlled for age, gender and school/class via matching of cases and controls, while Steinhausen et al. (2008) and Wiehe (1999) controlled only for age and gender, and Honjo et al. (2001) did not report controlling for any confounders. Jones et al. (2009) used a structured interview to assess exposure status, but the interviewer was not blinded to case/control status and hence they could not be awarded a star for this item. The remaining studies used self-report measures, which are considered by the NOS to be indicative of lower study quality. All five studies used the same method to measure the exposure for cases and controls. Two studies (Corville-Smith et al., 1998; Jones et al., 2009) reported different response rates for cases compared to controls, and the remaining three studies did not report response rates, hence no studies were awarded a star for this item.

3.3.5 Synthesis of results

Due to the complexity of results, findings are grouped firstly into three emotional disorder constructs: depression, anxiety, and emotional difficulties. Within these three sections, results are then grouped according to the four school attendance constructs: absenteeism, excused/medical absences, unexcused absences/truancy, and school refusal/fear. The depression and anxiety sections have an additional school attendance subheading of “mixed truancy and school refusal”, which refers to results reported by Egger et al. (2003), for pupils meeting criteria for both truancy and school refusal. Finally, where results are available, each emotional disorder and school attendance grouping includes (a) cross-sectional associations, (b) longitudinal associations between emotional disorder and subsequent school attendance, and (c) longitudinal associations between school attendance and subsequent emotional disorder.

Each emotional disorder section will begin with an effect direction plot to visually represent the results of all studies within that section, followed by the results of meta-analyses and/or narrative synthesis, as applicable. Table 10 provides published guidelines for interpreting effect sizes, although effect sizes should always be considered with context in mind (i.e. when, where and for whom the effect occurs (Ellis, 2010)). For example, in many clinical contexts, small effect

sizes are still highly meaningful and impactful. These guidelines should therefore be used only as a frame of reference to aid interpretation.

Table 10. Guidelines for interpreting effect sizes

Standardised mean difference (Cohen's *d*) (Cohen, 1992): Small *d* = 0.20 Medium *d* = 0.50 Large *d* = 0.80
Odds ratio (Chen et al., 2010): Small OR = 1.68 Medium OR = 3.47 Large OR = 6.71
Correlation coefficient (Hemphill, 2003): Small r < 0.20 Medium r = 0.20 to 0.30 Large r > 0.30

3.3.5.1 Depression

Table 11 shows an effect direction plot highlighting the direction and statistical significance of associations for depression and school attendance. The most researched attendance constructs in relation to depression were unexcused absences/truancy, followed by overall absenteeism. The majority of studies reported positive associations, suggesting that depression is associated with poorer school attendance (i.e. higher rates of absence). However, not all associations were significant at the 5% level. The effect direction plot also highlights a lack of longitudinal research in relation to depression and school attendance.

Table 11. Effect direction plot showing associations between depression and poor school attendance

Study	Design	Study quality	Sample size	Depression measurement type	School attendance construct				
					Absenteeism	Excused/ medical absence	Unexcused/ truancy	Refusal/fear	Mixed truancy /refusal
Cross-sectional associations between depression and school attendance									
Honjo 2001	CC	1/9	287	Continuous				▲	
Hunt 2009	CS	4/8	367	Continuous			▲		
Ingul 2012	CS	3/8	809	Continuous			▲		
Juvonen 2000	CS	2/8	178	Continuous	▲				
Kingery 2011	LO[a]	5/8	365	Continuous	○				
Repetto 2003	LO[a]	3/8	602	Continuous			▲		
Rosenberg 1987	CS	0/8	274	Continuous		○			
Sigfusdottir 2007	CS	1/8	5810	Continuous			▲		
Tsar 2011	CS	2/8	715	Continuous	▲				
Zadeh 2010	CS	3/8	776	Continuous	▲				
Puura 1998	CS	1/8	5686	Cut-off	△		○		
Bailly 1992	CS	2/8	728	Diagnostic			—[b]		
Egger 2003	CS	6/8	1422	Diagnostic			▲	▲	○
Gase 2014	CS	4/8	909	Diagnostic			▲		
Green 2005	CS	4/8	4689	Diagnostic			▲		
Jones 2009	Nested CC	7/9	184	Diagnostic		▲			
Vaughn 2013	CS	4/8	13056	Other			▲		
Longitudinal associations between depression and subsequent school attendance									
Burton 2014	LO	2/9	108	Continuous		△	▲		
Kingery 2011	LO	5/9	365	Continuous	▲				
Repetto 2003	LO	3/9	602	Continuous			△		
Wood 2012	LO	3/9	14428	Continuous	▲				

Study	Design	Study quality	Sample size	Depression measurement type	School attendance construct				
					Absenteeism	Excused/ medical	Unexcused/ truancy	Refusal/fear	Mixed truancy /refusal
Longitudinal associations between school attendance and subsequent depression									
Kingery 2011	LO	5/9	365	Continuous	△				
Repetto 2003	LO	3/9	602	Continuous			△		
Wood 2012	LO	3/9	14428	Continuous	△				

▲ = positive association ($p<0.05$); △ = positive association ($p\geq0.05$); ─ = no association; ○ = conflicting results.
CS = cross-sectional; LO = longitudinal; CC = case-control.
[a] – Kingery 2011 and Repetto 2003 were longitudinal studies but results referred to here are cross-sectional.
[b] – Bailly 1992 simply reported "no association", with no accompanying statistics.
NB: Green 2005 and Repetto 2003 did not report p-values, so these were calculated specifically for this review using data provided in the papers. All other studies reported p-values.

Where studies reported multiple outcomes:

- At least 70% of results in the same direction and same statistical significance – reported as one effect;
- <70% of results in the same direction – reported as conflicting results;
- All results in the same direction and at least 70% statistically significant – reported as statistically significant;
- All results in the same direction but <70% statistically significant – reported as not statistically significant (Thomson and Thomas, 2013) (see Section 3.2.7 for further explanation).

Absenteeism

- ***Cross-sectional associations.*** There was evidence for a small positive association between depressive symptoms and absenteeism in a meta-analysis of four studies reporting correlations (pooled r=0.11, 95% CI 0.07 to 0.15, p=0.005; see Figure 10). There was moderate heterogeneity between studies (I^2=63%) and observation of the forest plot shows that Kingery et al. (2011) found no association, while the other studies reported small positive associations. Three additional results that could not be included in the meta-analysis are synthesised narratively in the following paragraph.

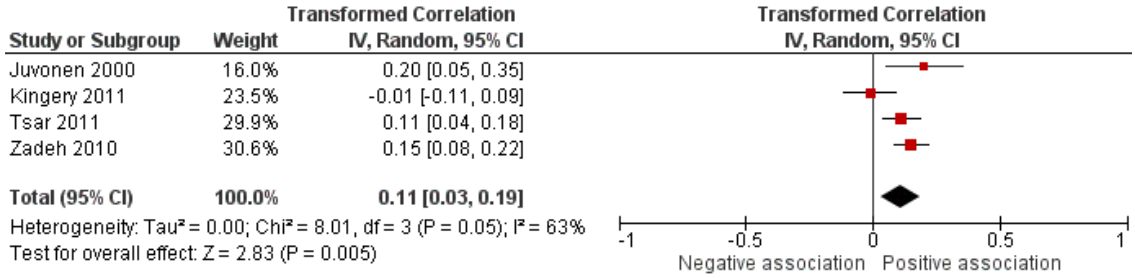

Figure 10. Forest plot showing Fisher's z-transformed correlations for the association between depression and absenteeism

NB. Coefficients were transformed prior to meta-analysis using Fisher's z-transformation, and the pooled estimate shown above is on the transformed scale. This was subsequently transformed back to a correlation coefficient for the accompanying narrative (pooled correlation coefficient=0.11, 95% CI 0.07 to 0.15, p=0.005). See Section 3.2.7 for further methodological details.

Kingery et al. (2011) reported a small positive cross-sectional correlation at 6-month follow-up when pupils were in 6th grade (equivalent to UK Year 7 when pupils are aged 11 to 12 years) and had just transitioned from elementary to middle school (r=0.15, 95% CI 0.05 to 0.25, p=0.004), despite not detecting an association at baseline (see Figure 10). Zadeh (2010) reported a positive association in their multiple regression model (regression coefficient=1.20, p<0.001, suggesting that for each one point increase on the Child Depression Inventory Short-Form, the number of days absent increased by 1.2 days); it was unclear what, if any, confounds were controlled for in this analysis. Puura et al. (1998) reported a small positive association between teacher-reported

absenteeism and child-reported depressive symptoms among 8-9 year olds in Finland (OR = 2.72, 95% CI 1.66 to 4.46, p<0.001), but this did not remain statistically significant (p-value not reported) after adjusting for other statistically significant teacher questionnaire items, which included measures of social problems, conduct problems, antisocial behaviour, anxious behaviour and other "miscellaneous" items.

- ***Longitudinal associations between depression and subsequent absenteeism.*** Results from two studies suggested a small positive association between self-reported depressive symptoms and subsequent absenteeism. Kingery et al. (2011) reported a positive correlation between baseline depression and absence at 6 month follow-up (r=0.13, 95% CI 0.03 to 0.23, p=0.013), and Wood et al. (2012) used structural cross-lagged regression to investigate self-reported depressive symptoms as a predictor of absences one year later, with coefficients of 0.05 (p<0.01)[2] and 0.10 (p<0.001)[2] for middle- and high-school pupils, respectively, where coefficients can be interpreted as the percentage increase in absence with each 1% increase in depressive symptoms.
- ***Longitudinal associations between absenteeism and subsequent depression.*** Findings from two studies that reported associations between absenteeism and subsequent depression were mixed. Kingery et al. (2011) found little evidence for a correlation between baseline school absences and self-reported depressive symptoms 6 months later in elementary and middle school pupils in the US (r=0.02, 95% CI 0.08 to 0.12, p=0.703). Wood et al. (2012), however, reported coefficients of 0.06 (p<0.001)[2] and 0.02 (p>0.05)[2], for middle- and high-school pupils, respectively, where coefficients can be interpreted as the percentage increase in depressive symptoms with each 1% increase in absence, indicating statistically significant evidence of a positive association for middle- but not high-school pupils.

[2] Wood et al. (2012) did not report exact p-values, nor enough data to allow calculation of exact p-values; authors did not respond to request for further information.

Excused/medical absences

- ***Cross-sectional associations.*** There were mixed results from two studies for associations between depression and excused/medical absences. In their study of 13 to 16 year olds in Scotland, Jones et al. (2009) reported increased odds of depression for pupils who had missed at least 20% of school days across three consecutive school terms for medical reasons, compared to controls with good attendance (best 10% attendance for their year group) (OR=2.62, 95% CI 1.23 to 5.59, p=0.011). Rosenberg (1987), however, reported small, non-significant correlations between parent-reported medical absences and child- (r=-0.04, 95% CI -0.16 to 0.08, p=0.510), teacher- (r=-0.00, 95% CI -0.12 to 0.12, p=0.999) and peer- (r=0.06, 95% CI -0.06 to 0.18, p=0.322) reported symptoms of depression among 8 to 11 year old pupils in the US, although these results should be interpreted in light of the study's substantial risk of bias (see Table 7).
- ***Longitudinal associations between depression and subsequent excused/medical absences.*** Burton et al. (2014) reported only weak evidence of a correlation between baseline self-reported depressive symptoms and self-reported excused absences 6 months later (r=0.17, 95% CI -0.02 to 0.35, p=0.079).

Unexcused absences/truancy

- ***Cross-sectional associations.*** Meta-analysis of three studies found a small positive association between depressive symptoms and unexcused absences/truancy (pooled r=0.15, 95% CI 0.13 to 0.17, p<0.001; see Figure 11). There was little heterogeneity between studies (I^2=4%). Repetto (2003) additionally reported small, positive cross-sectional correlations when data were collected at one- (0.12, 95% CI 0.04 to 0.19, p=0.003), two- (0.12, 95% CI 0.04 to 0.20, p=0.003) and three- (0.14, 95% CI 0.06 to 0.22, p<0.001) year follow-up. Ingul et al. (2012) found moderate differences in depressive symptoms between pupils with no, normal and high unexcused absences (see Table 6 for category descriptors; Cohen's *d*=0.65, 95% CI 0.40 to 0.89, p<0.001 for "no" versus "high" absences; *d*=0.41, 95% CI 0.20 to 0.63, p=0.004 for

"normal" versus "high" absences). In addition to the correlation reported in Figure 11, Hunt and Hopko (2009) demonstrated a positive association in a multiple regression controlling for other predictor variables (regression coefficient=0.26, p=0.002, indicating that the number of unexcused absences increased by 0.26 days for each one-point increase on the Youth Self-Report withdrawn/depressed subscale, where scores can range from 0 to 64). However, all subscales from the Youth Self-Report (including other internalising symptom subscales) were included as confounds, raising concerns about collinearity, which can lead to under-estimation of the predictive value of the exposure variable (Kirkwood and Sterne, 2003).

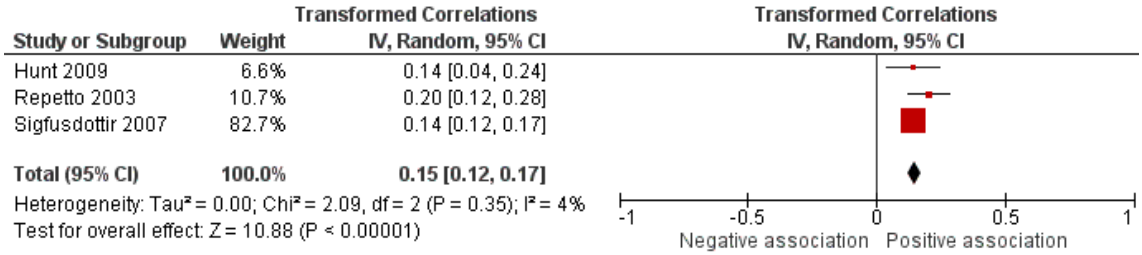

Figure 11. Forest plot showing Fisher's z-transformed correlations for the association between depression and unexcused absences/truancy

NB. Coefficients were transformed prior to meta-analysis using Fisher's z-transformation, and the pooled estimate shown above is on the transformed scale. This was subsequently transformed back to a correlation coefficient for the accompanying narrative (pooled correlation coefficient=0.15, 95% CI 0.13 to 0.17, p<0.001). See Section 3.2.7 for further methodological details.

There was also a medium-sized positive association between unexcused absences/truancy and depression reported as a binary variable, in meta-analysis with four studies (pooled OR=3.74, 95% CI 2.11 to 6.60, p<0.001; see Figure 12). There was moderate heterogeneity between studies (I^2=65%). Several other results could not be included in the meta-analysis and are synthesised narratively in the following paragraph.

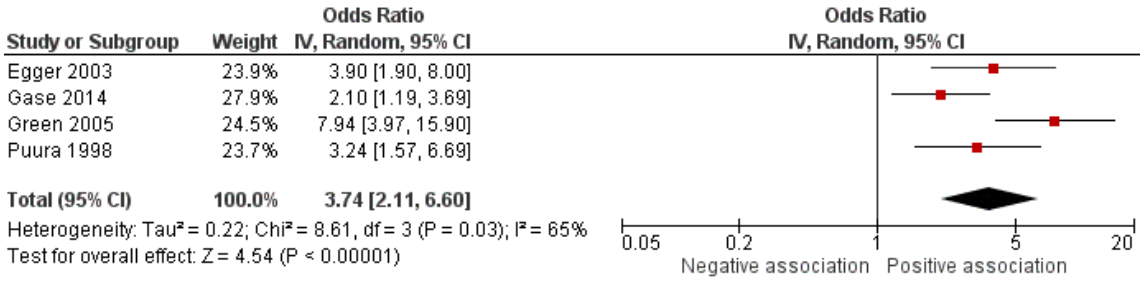

Figure 12. Forest plot showing odds ratios for the association between depression and unexcused absences/truancy

In addition to parent-reported truancy shown in Figure 12, Puura et al. (1998) demonstrated a small association between teacher-reported truancy and 8 to 9 year old child-reported depression (OR = 2.54, 95% CI 1.43 to 4.49, p=0.001), but neither result remained significant at the 5% level when all other statistically significant questionnaire items were controlled for. Egger et al. (2003), in addition to the analysis adjusting for age, gender and other types of school non-attendance (see Figure 12), reported a small positive association when also adjusting for psychiatric comorbidity (OR = 2.6, 95% CI 1.2 to 5.6, p=0.010), although given that psychiatric comorbidity is likely to lie on the causal pathway between depression and attendance, this result is arguably less reliable than those that do *not* adjust for comorbidity.

Gase et al. (2014) found a small positive association for pupils with “mild depression” (OR = 1.64, 95% CI 1.28 to 2.10, p=0.001) in addition to the association for “severe depression” shown in Figure 12, and Vaughn et al. (2013) reported evidence of positive associations between having a lifetime diagnosis of depression and moderate (OR = 1.43, 95% CI 1.04 to 1.98, p=0.029) and high (OR = 3.41, 95% CI 2.07 to 5.60, p<0.001) truancy, although when adjusting for lifetime anxiety, the association only remained statistically significant for high truancy. Bailly et al. (1992) reported “no correlation” but provided no accompanying statistics and did not report their analysis method.

- ***Longitudinal associations between depression and subsequent unexcused absences/truancy.*** Two studies provided mixed results for an association between baseline depression and subsequent unexcused

absences/truancy. Burton et al. (2014) found evidence of a large correlation between self-reported depressive symptoms and self-reported unexcused absences 6 months later in 14 to 19 year old pupils in the US (r=0.32, 95% CI 0.14 to 0.48, p<0.001), but in a study of 14 to 17 year olds, Repetto (2003) reported small and mostly statistically non-significant correlations between self-reported depressive symptoms and self-reported number of school days skipped/cut, at six time-points over three years (ranging from r=-0.01, 95% CI -0.09 to 0.07, p=0.864 to r=0.09, 95% CI 0.01 to 0.17, p=0.022).

- ***Longitudinal associations between unexcused absences/truancy and subsequent depression.*** In a three-year longitudinal study, Repetto (2003) reported small correlations between baseline number of school days skipped/cut and one- (r=0.09, 95% CI 0.01 to 0.17, p=0.021) and two- (r=0.10, 95% CI 0.02 to 0.18, p=0.018) year self-reported depressive symptoms, but results at all other time-points were not statistically significant (ranging from r=-0.02, 95% CI -0.10 to 0.06, p=0.624 to r=0.06, 95% CI -0.02 to 0.14, p=0.129).

School refusal/fear

- ***Cross-sectional associations.*** Findings from two studies suggested a positive cross-sectional association between depression and school refusal. Honjo et al. (2001) reported moderately greater self-reported symptoms of depression in Japanese youth with school refusal compared to controls (*d*=0.54, 95% CI 0.22 to 0.87, p=0.001), and Egger et al. (2003) reported large associations between school refusal and depression in 9 to 16 year old pupils in the US when adjusting for age, gender, and other types of absence (OR=10.0, 95% CI 4.1 to 26.0, p<0.001) and when additionally adjusting for psychiatric comorbidity (OR=13.0, 95% CI 3.4 to 42.0, p<0.001). However, findings from the latter should be interpreted with caution, given that psychiatric comorbidity may lie on the causal pathway between depression and school refusal.

Mixed truancy and school refusal

- ***Cross-sectional associations.*** Egger et al. (2003) additionally reported a large association between depression and mixed school refusal/truancy (i.e. pupils who met criteria for both school refusal and truancy) when adjusting for age, gender and other types of absence (OR=8.5, 95% CI 3.1 to 23.0, p<0.001), but not when additionally adjusting for psychiatric comorbidity (OR=0.8, 95% CI 0.2 to 2.7, p=0.700), although the latter should be interpreted with caution since comorbidity might lie on the causal pathway, as previously discussed.

3.3.5.2 Anxiety

Table 12 shows an effect direction plot highlighting the direction and statistical significance of associations between anxiety and school attendance. Because some studies reported a measure of total anxiety (e.g. a measure of total anxiety symptoms on a continuous scale, or total number of anxiety disorder diagnoses), and others reported measures of individual disorders (e.g. anxiety subscale scores, or individual anxiety disorder diagnoses), the results of total anxiety versus individual disorders are presented separately. The effect direction plot demonstrates that the school attendance construct that has been investigated most frequently in relation to anxiety is unexcused absences/truancy. There has been very little longitudinal research in this area. Overall, the findings for associations between anxiety and school attendance are mixed.

Table 12 presented on next page

Table 12. Effect direction plot showing associations between anxiety and poor school attendance

Study	Study Design	Study quality	Sample size	Anxiety measurement type	School attendance construct				
					Absenteeism	Excused/ medical	Unexcused/ truancy	Refusal/fear	Mixed truancy /refusal
Cross-sectional associations between total anxiety and school attendance									
Corville-Smith 1998	CC	7/9	54	Continuous			△		
Hunt 2009	CS	4/8	367	Continuous			○		
Pflug 2016	CS	1/8	1140	Continuous			▲		
Tsar 2011	CS	2/8	715	Continuous	▲				
Jones 2009	Nested CC	7/9	184	Diagnostic		△			
Vaughn 2013	CS	4/8	13056	Other			▲		
Cross-sectional associations between separation anxiety and school attendance									
Ingul 2012	CS	3/8	809	Continuous			△		
Egger 2003	CS	6/8	1422	Diagnostic			—*	▲	▲
Green 2005	CS	4/8	4689	Diagnostic			▽		
Pflug 2016	CS	1/8	1140	Other			▽		
Cross-sectional associations between generalised anxiety and school attendance									
Ingul 2012	CS	3/8	809	Continuous			▲		
Egger 2003	CS	6/8	1422	Diagnostic			▽	○	△
Green 2005	CS	4/8	4689	Diagnostic			▲		
Pflug 2016	CS	1/8	1140	Other			△		
Cross-sectional associations between social anxiety and school attendance									
Ingul 2012	CS	3/8	809	Continuous			▲		
Egger 2003	CS	6/8	1422	Diagnostic			▽	△	
Pflug 2016	CS	1/8	1140	Other			▲		
Cross-sectional associations between panic disorder and school attendance									
Egger 2003	CS	6/8	1422	Diagnostic			▽	○	▲
Pflug 2016	CS	1/8	1140	Other			△		

Study	Study Design	Study quality	Sample size	Anxiety measurement type	School attendance construct				
					Absenteeism	Excused/ medical	Unexcused/ truancy	Refusal/fear	Mixed truancy /refusal
Cross-sectional associations between simple phobia and school attendance									
Egger 2003	CS	6/8	1422	Diagnostic			○	△	
Green 2005	CS	4/8	4689	Diagnostic			▲		
Cross-sectional associations between OCD and school attendance									
Jones 2009	Nested CC	7/9	184	Diagnostic		△			
Cross-sectional associations between PTSD and school attendance									
Jones 2009	Nested CC	7/9	184	Diagnostic		△			
Cross-sectional associations between agoraphobia and school attendance									
Pflug 2016	CS	1/8	1140	Other			△		
Longitudinal associations between total anxiety and subsequent school attendance									
Burton 2014	LO	2/9	108	Continuous		△	△		
Park 2015	LO	6/9	248	Continuous				△	
Longitudinal associations between separation anxiety and subsequent school attendance									
Park 2015	LO	6/9	248	Diagnostic				△	

▲ = positive association ($p<0.05$); △ = positive association ($p\geq0.05$); ─ = no association; ▽ = negative association ($p\geq0.05$); ○ = conflicting results.
CS = cross-sectional; LO = longitudinal; CC = case-control. OCD = Obsessive-Compulsive Disorder; PTSD = Post-Traumatic Stress Disorder.
*Egger 2003 reported an odds ratio of 1.0.
NB: Green 2005 did not report p-values, so these were calculated specifically for this review using data provided in the paper. All other studies reported p-values.

Where studies reported multiple outcomes:

- At least 70% of results in the same direction and same statistical significance – reported as one effect;
- <70% of results in the same direction – reported as conflicting results;
- All results in the same direction and at least 70% statistically significant – reported as statistically significant;
- All results in the same direction but <70% statistically significant – reported as not statistically significant (Thomson and Thomas, 2013) (see Section 3.2.7 for further explanation).

Absenteeism

- ***Cross-sectional associations.*** Results from one study (Tsar, 2011) suggested a small positive association between self-reported anxiety and absenteeism (r=0.08, 95% CI 0.01 to 0.15, p=0.032), although this study had substantial risk of bias (see Table 7).

Excused/medical absences

- ***Cross-sectional associations.*** Jones et al. (2009) reported non-statistically significant associations between medical absences (pupils who missed 20% or more of school days across three consecutive terms for medical reasons compared to those in the best 10% attendance for their year group), and meeting diagnostic criteria for any anxiety disorder (OR=1.36, 95 CI 0.69 to 2.69, p=0.380), obsessive-compulsive disorder (OR=2.07, 95 CI 0.99 to 4.2, p=0.060) and post-traumatic stress disorder (OR=2.12, 95% CI 0.65 to 6.89, p=0.220).
- ***Associations between anxiety and subsequent excused/medical absences.*** In their study of 14 to 19 year old adolescents in the US, Burton et al. (2014) reported a non-statistically significant correlation between self-reported anxiety and self-reported excused absences 6 months later (r=0.17, 95% CI -0.02 to 0.35, p=0.079).

Unexcused absences/truancy

- ***Cross-sectional associations.*** There were mixed findings regarding associations between total anxiety and unexcused absences/truancy. Vaughn et al. (2013) reported an association between a lifetime diagnosis of anxiety and “moderate” (OR=1.72, 95% CI 1.18 to 2.51, p=0.005) and “high” (OR=3.46, 95% CI 1.72 to 6.79, p<0.001) truancy, although when lifetime diagnosis of depression was controlled for, the association only remained statistically significant for moderate truancy (OR=1.97, 95% CI 1.13 to 3.44, p=0.017). Again, however, this result should be interpreted with caution given that depression might lie on the causal pathway between anxiety and attendance.

  Pflug and Schneider (2016) reported a small increase in total number of self-reported anxiety screening questions answered “yes” for truants compared to non-truants (Cohen’s *d*=0.21, 95% CI 0.00 to 0.42,

p=0.046). Corville-Smith et al. (1998), based on a small sample size (N=54), reported only weak evidence of a difference in self-reported anxiety between cases with a high number of unexcused absences and controls with good attendance (*d*=0.49, 95% CI 0.06 to 1.03, p=0.076). Hunt and Hopko (2009) reported little evidence for an association between self-reported anxiety and unexcused absences, both in a correlation (r=0.05, 95% CI -0.05-0.15, p=0.339) and multiple linear regression controlling for other predictors (regression coefficient=-0.05, p=0.542, suggesting that for each one point increase on the Youth Self-Report anxiety subscale, unexcused absences decreased by 0.05 days).

Meta-analysis of two studies found little evidence of an association between unexcused absences/truancy and separation anxiety disorder (pooled OR=0.75, 95% CI 0.22 to 2.57, p=0.65; see Figure 13), with no heterogeneity between studies (I^2 = 0%). Additionally, Pflug and Schneider (2016) reported no association between unexcused absences and answering "yes" to a separation anxiety disorder screening question (OR=0.84, 95% CI 0.30 to 2.37, p=0.741). Ingul et al. (2012), however, reported that pupils with "high" unexcused absences had higher self-reported symptoms of separation anxiety compared to those with "no" unexcused absences (*d*=0.36, 95% CI 0.12 to 0.60, p=0.003), but differences were not statistically significant when comparing pupils with "high" versus "normal" unexcused absences (*d*=0.19, 95% CI -0.03 to 0.40, p=0.088).

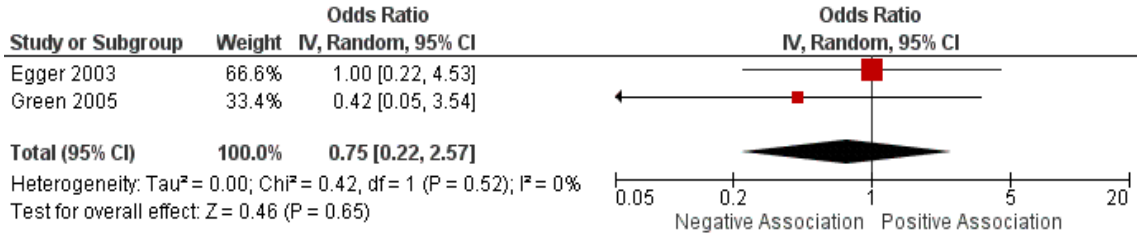

Figure 13. Forest plot showing odds ratios for the association between separation anxiety disorder and unexcused absences/truancy

Meta-analysis of two studies revealed little evidence for an association between unexcused absences/truancy and generalised anxiety disorder (pooled OR=1.62, 95% CI 0.35 to 7.53, p=0.54; see Figure 14), although heterogeneity between studies was large (I^2= 79%), with Green et al. (2005) reporting a moderate positive association and Egger et al. (2003) reporting a small negative association. The measure of truancy utilised in Green et al. (2005) was whether the child had "any" versus "no" unauthorised absences in the past term, whereas Egger et al. (2003) used a more descriptive measure of truancy (see Table 6), which may explain the different findings.

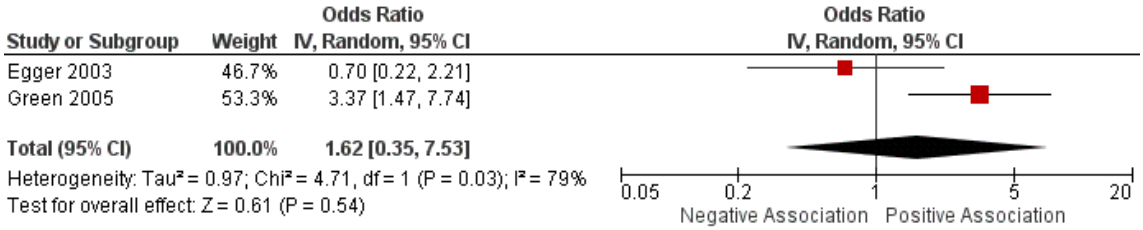

Figure 14. Forest plot showing odds ratios for the association between generalised anxiety disorder and unexcused absences/truancy

Pflug and Schneider (2016) found no association between unexcused absences and answers to a generalised anxiety disorder screening question (OR=1.37, 95% CI 0.90 to 2.07, p=0.138). Ingul et al. (2012), however, reported small-to-medium-sized increases in self-reported generalised anxiety symptoms for pupils with "high" versus "no" (*d*=0.45, 95% CI 0.21 to 0.69, p<0.001) and "high" versus "normal" (*d*=0.30, 95% CI 0.08 to 0.51, p=0.007) unexcused absences. There was some suggestion of a positive association between unexcused absences and social anxiety. Pflug and Schneider (2016) reported a small association between unexcused absences and answers to a social anxiety screening question (OR=1.98, 95% CI 1.27 to 3.08, p=0.003), and Ingul et al. (2012) reported small increases in self-reported social anxiety symptoms for pupils with "high" versus "no" (*d*=0.34, 95% CI 0.10 to 0.58, p=0.005) and "high" versus "normal" (*d*=0.33, 95% CI 0.12 to 0.54, p=0.003) unexcused absences. Egger et al. (2003), however, reported no association between

truancy and social anxiety assessed via diagnostic interview (OR=0.3, 95% CI 0.1 to 1.4, p=0.100).

There was little evidence for an association between unexcused absences/truancy and panic disorder assessed via diagnostic interview (OR=0.7, 95% CI 0.1 to 3.7, p=0.700; (Egger et al., 2003)) or answers to a panic disorder screening question (OR=1.32, 95% CI 0.85 to 2.06, p=0.219; (Pflug and Schneider, 2016)). Meta-analysis of two studies found little evidence for an association between unexcused absences/truancy and specific phobia (pooled OR=1.57, 95% CI 0.41 to 5.92, p=0.51; see Figure 15), with moderate heterogeneity between studies (I^2=50%). One study found little evidence of an association between unexcused absences and responses to an agoraphobia screening question (OR=1.15, 95% CI 0.71 to 1.87, p=0.572; (Pflug and Schneider, 2016)).

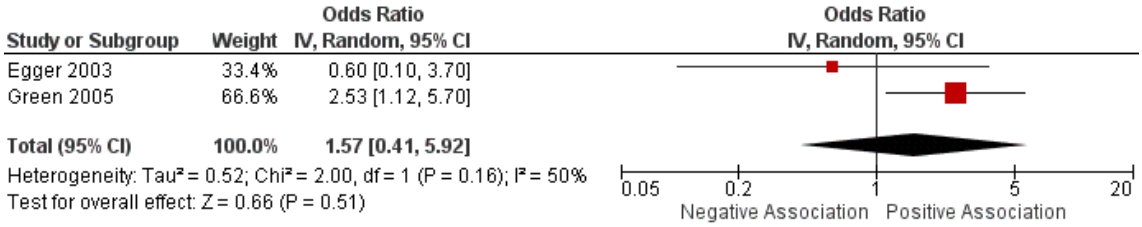

Figure 15. Forest plot showing odds ratios for the association between specific phobia and unexcused absences/truancy

- ***Longitudinal associations between anxiety and subsequent unexcused absences/truancy.*** Burton et al. (2014) reported a non-statistically significant correlation between self-reported anxiety and self-reported unexcused absences at 6 month follow-up (r=0.15, 95% CI 0.04 to 0.33, p=0.121).

School refusal/fear

- ***Cross-sectional associations.*** Using diagnostic interviews, Egger et al. (2003) reported a large association between school refusal and separation anxiety disorder (OR=11.0, 95% CI 4.9 to 24.0, p<0.001), which remained statistically significant when controlling for psychiatric comorbidity (OR=8.7, 95% CI 4.1 to 19.0, p<0.001). The same study also reported positive associations between school refusal and social anxiety

(OR=6.6, 95% CI 2.6 to 17.0, p<0.001), generalised anxiety disorder (OR=2.9, 95% CI 1.0 to 8.0, p=0.050) and simple phobia (OR=11.0, 95% CI 3.3 to 39.0, p<0.001). Whilst none of these associations remained significant after controlling for psychiatric comorbidity, such results may be *less* reliable because other disorders may lie on the causal pathway, as previously discussed. Egger et al. (2003) found no association between school refusal and panic disorder.

- ***Longitudinal associations between anxiety and subsequent school refusal/fear.*** Park et al. (2015) found little evidence for differences in baseline state (*d*=0.31, 95% CI -0.15 to 0.78, p=0.342) or trait (*d*=0.28, 95% CI -0.19 to 0.75, p=0.216) anxiety, nor separation anxiety disorder assessed via diagnostic interview (OR=1.30, 95% CI 0.47 to 3.57, p=0.618), when comparing pupils with and without school refusal at 5-month follow-up. However, this study had low statistical power due to the small number of participants with school refusal (n=19).

Mixed truancy and school refusal

- ***Cross-sectional associations.*** Egger et al. (2003) reported large associations with their additional category of mixed school refusal/truancy and separation anxiety disorder (OR=19.0, 95% CI 3.3 to 110.0, p=0.001 and OR=19.0, 95% CI 5.3 to 72.0, p=0.002, before and after adjusting for psychiatric comorbidity, respectively) and panic disorder (OR=38.0, 95% CI 11.0 to 135.0, p<0.001 and OR=5.7, 95% CI 1.1 to 31.0, p=0.040). Generalised anxiety disorder was no longer associated after adjusting for psychiatric comorbidity (before adjusting for comorbidity OR=4.4, 95% CI 1.0 to 19.0, p=0.040; after adjusting for comorbidity OR=1.3, 95% CI 0.2 to 11.0, p=0.800).

3.3.5.3 Emotional Difficulties

Table 13 shows an effect direction plot highlighting the direction and statistical significance of associations between emotional difficulties (i.e. combined depression/anxiety) and school attendance. The effect direction plot demonstrates that, in line with findings from depression and anxiety, the school attendance constructs that have been investigated the most frequently in relation to emotional difficulties are unexcused absences/truancy, and overall absenteeism. The majority of studies reported positive associations, suggesting that greater emotional difficulties are associated with poorer school attendance (i.e. more absence), although results were not always significant at the 5% level. There was very little longitudinal research in this area.

Table 13 presented on next page

Table 13. Effect direction plot showing associations between emotional difficulties and poor school attendance

Study	Study Design	Study quality	Sample size	Emotional difficulties measurement type	School attendance construct			
					Absenteeism	Excused/ medical	Unexcused/ truancy	Refusal/fear
Cross-sectional associations between emotional difficulties and school attendance								
Hunt 2009	CS	4/8	367	Continuous			△	
Ingul 2012	CS	3/8	809	Continuous			▽	
Nik Jaafar 2013	CS	3/8	373	Continuous			△	
Pflug 2016	CS	1/8	977	Continuous			▲	
Steinhausen 2008	Nested CC	5/9	146/274[a]	Continuous			▲	▲
Thalji 2010	LO[b]	5/9	300	Continuous	△			
Wiehe 1999	CS	2/8	140	Continuous			△	
Wiehe 1999[c]	Nested CC	7/9	30/14	Continuous			○	
Jones 2009	Nested CC	7/9	184	Cut-off		▲		
Siriwardhana 2013	CS	5/8	1505	Cut-off	▲			
Green 2005	CS	4/8	7621	Diagnostic	▲		▲	
Meltzer 2000	CS	4/8	6265	Diagnostic	▲		▲	
Meltzer 2003	LO[b]	6/9	1919	Diagnostic	▲			
Longitudinal associations between emotional difficulties and subsequent school attendance								
Thalji 2010	LO	5/9	300	Continuous	▲			
Park 2015	LO	6/9	248	Continuous				△
Meltzer 2003	LO	6/9	1919	Diagnostic	▲			

▲ = positive association ($p<0.05$); △ = positive association ($p\geq0.05$); ▽ = negative association ($p\geq0.05$); ○ = conflicting results.
CS = cross-sectional; LO = longitudinal; CC = case-control.
NB: Green 2005, Meltzer 2000, Meltzer 2003, and Wiehe 1999 did not report p-values, so these were calculated specifically for this review using data provided in the papers. All other studies reported p-values.
[a] – Steinhausen 2008 used nested case-control design at two time-points with sample sizes of 146 and 274 at times 1 and 2, respectively.
[b] – Thalji 2010 and Meltzer 2003 were longitudinal studies but the results referred to in these rows are cross-sectional.
[c] - Wiehe 1999 was a cross-sectional and two nested case-control studies with sample sizes of 140, 30 and 14, respectively.

Where studies reported multiple outcomes:

- At least 70% of results in the same direction and same statistical significance – reported as one effect;
- <70% of results in the same direction – reported as conflicting results;
- All results in the same direction and at least 70% statistically significant – reported as statistically significant;
- All results in the same direction but <70% statistically significant – reported as not statistically significant (Thomson and Thomas, 2013) (see Section 3.2.7 for further explanation).

Absenteeism

- ***Cross-sectional associations.*** Meta-analysis of three UK population surveys found a small positive association between meeting diagnostic criteria for any emotional disorder and having any school absences in the last term (pooled OR=2.03, 95% CI 1.66 to 2.49, p<0.001; see Figure 16). There was little heterogeneity (I^2=24%) between studies, which is unsurprising given the similarity of their research methods. Additionally, Siriwardhana et al. (2013) reported a small-to-medium-sized association between scoring above a cut-off on self-reported internalising problems and having >20% school absences, in their sample of 12 to 17 year olds in Sri Lanka (unadjusted OR=2.48, 95% CI 1.30 to 4.70, p=0.006; adjusted for age, gender, ethnicity and a range of other variables OR=3.00, 95% CI 1.50 to 6.00, p=0.002). In their study of 11-14 year old pupils in the US, however, Thalji (2010) reported a small correlation between internalising problems and absenteeism, which was not statistically significant (r=0.08, 95% CI -0.03 to 0.19, p=0.167).

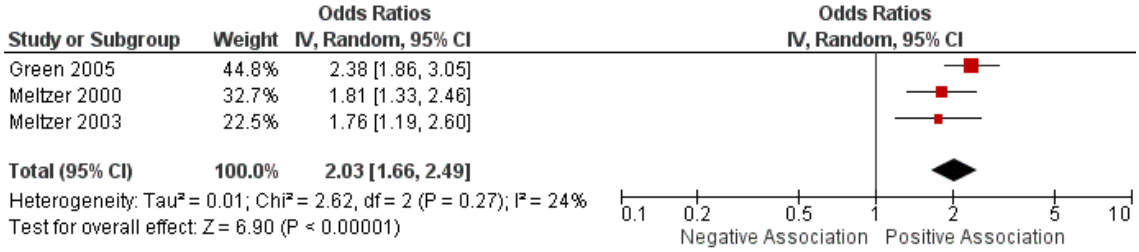

Figure 16. Forest plot showing odds ratios for the association between emotional difficulties and absenteeism

- ***Longitudinal associations between emotional difficulties and subsequent absenteeism.*** Two longitudinal studies suggested a small positive association between emotional difficulties and subsequent absenteeism. Thalji (2010) reported small positive associations between baseline internalising problems and absenteeism one year later, in both a correlation (r=0.15, 95% CI l 0.04-0.26, p=0.009), and multiple linear regression controlling for socioeconomic status, parental marital status, baseline absences and baseline externalising symptoms (regression coefficient=0.03, p=0.034, suggesting that for each one-point increase on the Youth Self-Report internalizing scale, absenteeism increased by

three percentage points). In an unadjusted analysis, Meltzer et al. (2003) reported a small positive association between meeting diagnostic criteria for any emotional disorder and having any versus no school absences three years later (OR=1.44, 95% CI 1.07 to 1.94, p=0.016).

Excused/medical absences

- ***Cross-sectional associations.*** In their study comparing CYP who missed 20% or more of school days across three school terms for medical reasons with those in the top 10% attendance for their year-group, Jones et al. (2009) reported increased odds for the former of scoring above a cut-off on child- (OR=1.24, 95% CI 1.11 to 1.39, p<0.001) and parent- (OR=1.24, 95% CI 1.11 to 1.39, p<0.001) reported emotional difficulties, as well as meeting diagnostic criteria for any emotional disorder (OR=2.00, 95% CI 1.13-3.55, p=0.015).

Unexcused absences/truancy

- ***Cross-sectional associations.*** Findings provided some evidence for a positive association between emotional difficulties and unexcused absences/truancy. Meta-analysis of three studies where standardised mean differences could be calculated produced a small positive association (Cohen's *d*=0.39, 95% CI 0.17 to 0.62, p<0.001, see Figure 17), with little heterogeneity between studies (I^2=19%).

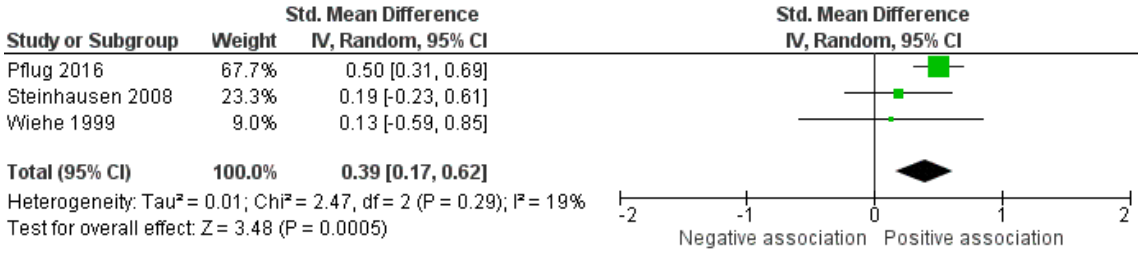

Figure 17. Forest plot showing standardised mean differences for the association between emotional difficulties and unexcused absences/truancy

A further four standardised mean differences from three studies (Nik Jaafar et al., 2013; Pflug and Schneider, 2016; Steinhausen et al., 2008) could not be included in the meta-analysis but all reported small-to-medium-sized associations, with effect sizes ranging from *d*=0.35, 95% CI 0.10 to 0.60, p=0.006 to *d*=0.50, 95% CI 0.31 to 0.69, p<0.001. The

association in Nik Jaafar et al. (2013) did not remain statistically significant in a logistic regression controlling for confounders (OR=1.03, 95% CI 0.99 to 1.06, p=0.203), but the authors entered Youth Self-Report externalising score and total problem score (a composite of internalising and externalising scores) as confounders raising concerns regarding collinearity. Two UK studies found associations with teacher-reported unexcused absences/truancy when comparing CYP meeting diagnostic criteria for any emotional disorder to those with no emotional disorders (OR=2.69, 95% CI 1.81 to 4.00, p<0.001; Green et al. (2005)), and even more so when comparing CYP with any emotional disorder to those with no mental health disorders at all (OR=16.12, 95% CI 11.03 to 23.55, p<0.001); Meltzer et al. (2000)).

Conversely, meta-analysis of three studies reporting correlation coefficients found no association (pooled r=0.00, 95% CI -0.16 to 0.16, p=0.99, see Figure 18). Heterogeneity between studies (I^2=85%) was large, and the forest plot shows that Ingul et al. (2012) reported a negative association while the other two studies reported small but non-significant positive associations. Wiehe (1999) additionally reported no difference in self-reported internalising scores for “habitual truants” who had unexcused absences more than two standard deviations above the mean, compared with controls who had no unexcused absences (*d*=0.00, 95% CI -1.05 to 1.05, p=0.99), although this result was obtained from a very small sample (N=14).

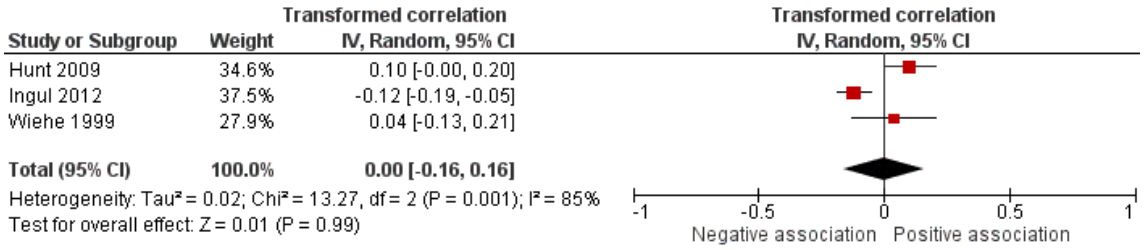

Figure 18. Forest plot showing Fisher's z-transformed correlations for the association between emotional difficulties and unexcused absences/truancy

NB. Coefficients were transformed prior to meta-analysis using Fisher's z-transformation, and the pooled estimate shown above is on the transformed scale. This was subsequently transformed back to a correlation coefficient for the accompanying narrative (pooled correlation coefficient: 0.00, 95% CI -0.16 to 0.16, p=0.99). See Section 3.2.7 for further methodological details.

School refusal/fear

- ***Cross-sectional associations.*** One study (Steinhausen et al., 2008) reported large positive associations between school fear and self-reported internalising problems at two time-points (time one - mean age 13.2 years; *d*=0.82, 95% CI 0.42 to 1.22, p<0.001; time two - mean age 16.3 years; *d*=1.10, 95% CI 0.66 to 1.53, p<0.001).
- ***Longitudinal associations between emotional difficulties and subsequent school refusal/fear.*** Park et al. (2015) reported weak differences in baseline internalising symptoms between 6 to 7 year old South Korean children who did and did not meet school refusal criteria five months later (unadjusted *d*=0.50, 95% CI 0.03 to 0.97, p=0.050; adjusted for parental education and household income: p=0.080).

3.4 Discussion

This is the first systematic review and meta-analysis to report associations between emotional disorder and poor attendance at school. A summary of results and assessment of the quality of evidence for each research question is presented below. This is followed by a discussion of the overall strengths and limitations of the systematic review, implications for research and practice, and final conclusions.

3.4.1 Summary of evidence

3.4.1.1 Is there an association between child and adolescent emotional disorder and poor attendance at school?

Evidence for depression

Nineteen studies provided evidence in relation to depression:

- Five studies suggested a small positive, cross-sectional association between depression and overall absenteeism. Two longitudinal studies reported a small positive association between depression and subsequent absenteeism, but there were mixed findings for an association between absenteeism and subsequent depression. There was a lack of high quality evidence for associations between depression and absenteeism, with no studies adjusting for potential confounds, and none using diagnostic measures of depression.
- There were mixed results from two studies regarding cross-sectional associations between depression and excused/medical absences, although the study reporting a moderate positive association was of substantially higher quality than the study reporting no association. One study reported no longitudinal association between depression and excused absences six months later, although this study was of poor quality.
- Results from ten studies suggested a small-to-medium-sized positive, cross-sectional association between depression and unexcused absences or truancy. These studies were of poor quality overall, with particular issues regarding a lack of representative study samples, and a reliance on self-report measures for both depression and school attendance. There were mixed results from longitudinal studies for associations between depression and subsequent unexcused absences, as well as unexcused absences and subsequent depression.
- Results from two studies suggested a moderate-to-large, positive cross-sectional association between depression and school refusal. There were no longitudinal studies reporting on this association.

- Overall, findings suggest small-to-medium sized, cross-sectional associations between depression and poor school attendance. However, there is a lack of high quality research, and limited longitudinal evidence.

Evidence for anxiety

Eleven studies provided evidence regarding anxiety:

- One study reported a small positive cross-sectional association between total anxiety and overall absenteeism, and no studies reported longitudinal associations. However, the study reporting associations between anxiety and absenteeism was of poor quality.
- One study provided little evidence of a cross-sectional association between total anxiety and medical absences, and one provided little evidence for a longitudinal association between total anxiety and excused/medical absences 6 months later. However, the studies reporting on the association between anxiety and excused/medical absences were of poor quality.
- Four studies provided mixed results regarding cross-sectional associations between measures of total anxiety and unexcused absences/truancy, ranging from no association, to a medium-sized positive association. The quality of these studies was varied, but there was no clear association between study quality and strength of effect. Results suggested no cross-sectional association between unexcused absences/truancy and separation anxiety disorder, generalised anxiety disorder, specific phobia, social anxiety disorder, or panic disorder. However, these results are limited by small study numbers, and wide confidence intervals from meta-analyses show a lack of precision in the pooled effect estimates. One study that measured subtypes of anxiety using a continuous self-report scale, reported small positive cross-sectional associations between unexcused absences and symptoms of separation anxiety disorder, generalised anxiety disorder and social anxiety. It is possible that there is a larger association with unexcused absences/truancy when anxiety is measured using self-reports of symptoms, rather than diagnostic assessments. One study reported no longitudinal association between total anxiety symptoms and unexcused

absences/truancy six months later, although this study was of poor quality.

- One study reported a large, positive cross-sectional association between school refusal and separation anxiety disorder assessed via diagnostic interview, but social anxiety, generalised anxiety disorder and specific phobia were only associated in analyses unadjusted for psychiatric comorbidity, suggesting that any observed associations between school refusal and these disorders may be explained by associations with other disorders, particularly separation anxiety and/or depression. One study reported no longitudinal associations between total anxiety or separation anxiety disorder, and school refusal five months later.
- Overall, there were mixed findings for associations between anxiety and poor school attendance, and a lack of high-quality research. The ability to synthesise the evidence regarding anxiety was restricted by the additional level of heterogeneity in that some studies reported a measure of total anxiety symptoms, and other reported associations for individual anxiety disorders.

Evidence for emotional difficulties

Thirteen studies provided evidence in relation to emotional difficulties, i.e. outcomes incorporating both depression and anxiety:

- Results from five moderate-quality studies suggested a small positive cross-sectional association between emotional difficulties and overall absenteeism. Two longitudinal studies additionally reported small positive associations between emotional difficulties and absenteeism at one- and three-year follow-up.
- One high-quality study reported a small positive cross-sectional association between emotional difficulties and excused/medical absences, both with emotional difficulties measured as the total number of anxiety or depressive disorders assessed via diagnostic interview, and when measured as self-reported symptoms of anxiety and depression combined.
- Nine studies provided mixed results for cross-sectional associations between emotional difficulties and unexcused absences/truancy, ranging

from no association in studies reporting correlation coefficients, to a small positive association from those reporting mean emotional difficulties scores between truants and non-truants. It is possible that stronger associations are observed when unexcused absences/truancy reach a threshold level, as in the case of studies reporting truancy as a binary variable versus those reporting a continuous measure. However, these results must be interpreted in light of the small number of studies and poor methodological quality. There were no studies reporting longitudinal associations between emotional difficulties and unexcused absences/truancy.

- One study found evidence of a large positive cross-sectional association between emotional difficulties and school refusal/fear, and one longitudinal study reported small, weak associations between emotional difficulties and school refusal five months later.
- Overall, the results suggest positive cross-sectional associations between emotional difficulties and poor school attendance, although there was variability in the findings reported by individual studies, and few studies were of high methodological quality.

3.4.1.2 Is the association moderated by between-study characteristics such as age of child, type of emotional disorder, somatic symptoms, measurement source (e.g. child-report, parent-report), assessment method (diagnostic tool or measures of continuous symptoms), study setting, or type of school?

The protocol for this systematic review stated that if there were sufficient data, subgroup analyses would be performed to investigate the effects of potential moderator variables. However, the substantial heterogeneity between studies in terms of how emotional disorder and school attendance were measured resulted in too few studies within each combination of emotional disorder and school attendance construct to allow subgroup analyses to be performed, and hence the effects of potential moderator variables could not be investigated. The inconsistent findings between studies, however, suggest that there may indeed be factors that moderate the association between emotional disorder and poor school attendance, and further research to investigate moderators

would be beneficial, as it may be that emotional disorder is more strongly associated with poor school attendance in particular contexts, or in particular subgroups of CYP.

3.4.2 Strengths and limitations

This is the first systematic review and meta-analysis of the association between child and adolescent emotional disorder and poor attendance at school, bringing together results from multiple studies and synthesising the existing evidence-base, and allowing broader conclusions to be made than would be possible from individual studies. The review followed best practice guidelines for conducting (Centre for Reviews and Dissemination, 2009) and reporting (Moher et al., 2009) systematic reviews. The search strategy did not restrict by date or country of study, and the inclusion criteria for school attendance were purposely broad, which resulted in a systematic review with conceptual breadth and allowed for the synthesis of evidence across the entire field of school attendance. In addition to searching for published literature, sources of unpublished/grey literature were also sought, thus minimising the potential impact of publication bias, and electronic database searches were supplemented with additional search strategies to minimise the likelihood of missing important studies. Screening of identified studies was completed by two independent reviewers, and data extraction and quality assessment were completed by one reviewer and double-checked by a second, in order to enhance the accuracy of the screening process and minimise bias.

The Newcastle-Ottawa Scale (NOS) was used to assess the quality of included studies. Compared to other quality assessment tools, the NOS benefits from having versions available for cross-sectional, case-control and cohort study designs, all of which were relevant to this review, and after pilot testing of three potential tools, the NOS was considered by two reviewers to be the most user-friendly. However, once quality assessment began, it became clear that the NOS required adaptation in order to make it suitable for the current review (see Section 3.2.5 for a description of the adaptations made). Additionally, the version of the NOS for cross-sectional studies was the only one to assess the reporting of results, and required studies to report effect estimates, 95% confidence intervals and a p-value in order to be awarded a star. Many studies

in this review reported effect estimates and p-values but lacked confidence intervals, and studies of cross-sectional design lost a star on the NOS scale for this, whereas case-control and longitudinal studies did not.

In order to produce a meaningful synthesis, school attendance was grouped into four constructs: absenteeism, excused/medical absences, unexcused absences/truancy, and school refusal/fear. However, these groups could have been further broken down. For example, studies used the term “medical absences” when reporting absences for medical reasons, but “excused absences” often included additional possible reasons, such as absence to attend a wedding, funeral, or religious event, and these two constructs could have been separated for the purposes of data synthesis. Likewise, while the majority of studies that reported truancy simply measured unexcused absences, others used more descriptive assessments to measure truancy, and an alternative option for data synthesis would have been to synthesise the results for these constructs separately.

Although the inclusion of a broad range of emotional disorder and school attendance constructs was a strength in terms of the ability to draw conclusions from the entire research field, it also presented challenges for data synthesis. Firstly, meta-analysis was only possible for sub-samples of studies that were sufficiently similar, and for each meta-analysis the number of studies included was small (between two and four studies). Random-effects meta-analysis with small study numbers results in less certain summary estimates, and provides a limited representation of potential between-study variance (Borenstein et al., 2009). Secondly, the small number of studies for each combination of emotional disorder and school attendance construct prevented any formal exploration of moderators using subgroup analyses, and thus the second research question could not be addressed. Finally, it prevented any examination of publication bias, and it is possible that such bias was present in this review. However, the search strategy included measures to reduce the likelihood of publication bias, for example by searching sources of grey literature, and ten of the thirty included papers were not published in peer-reviewed journals.

Papers published in languages other than English were excluded from this review due to resource constraints in terms of obtaining translations, but

searching only for sources published in English can lead to oversampling of statistically significant studies (Borenstein et al., 2009). It is not known how many, if any, non-English articles would have otherwise met our inclusion criteria since English-language was set as a limiter for database searches. In addition, eight studies identified by database searches could not be accessed and were therefore unable to be assessed for eligibility. Of those full-texts that could be accessed, 13% were included in the review. Applying this percentage to those eight papers that could not be accessed suggests that one of them would have been eligible and included in the review. It is unlikely that inclusion of one additional paper would have substantially changed the conclusions of the review, and these eight articles were judged to be unlikely to have met inclusion criteria due to their age and/or source of publication (suggesting that they were likely to be narrative or anecdotal reports, rather than reports of quantitative analyses).

Effect direction plots were used to visually summarise multiple results across many studies, some of which were synthesised narratively and others combined in meta-analyses, thus assisting the ability to make sense of complex evidence. However, effect direction plots emphasise p-values without acknowledging effect sizes, and the use of a 70% cut-off when considering whether results are in the same direction/of the same significance is somewhat arbitrary. However, the methods used to devise the effect direction plots followed published guidelines (Thomson and Thomas, 2013), and the narrative synthesis and meta-analyses that followed provided a more in-depth discussion of the individual results of each study, including effect sizes. In addition, since all of the studies in this systematic review were observational, even where positive associations were observed, no conclusions can be made regarding causality (see Section 1.6.1 of this thesis for further discussion of causality in observational research).

The quality of included studies in this systematic review was variable, but there were several limitations that were observed across many studies. Few studies controlled for potential confounders, either in the design (for example, by matching cases and controls in case-control studies) or in statistical analyses. This is important since there are several variables that present as theoretically-

plausible confounders (e.g. age, gender, socioeconomic status), and some of the studies that did control for confounders reported statistically significant associations only in unadjusted analyses. Most studies utilised validated scales to measure self-reported symptoms, rather than emotional disorder diagnoses. Although self-reports allow for examination of the phenomenon across the whole spectrum of symptoms, given the key role that diagnostic frameworks play in policy and service provision, it may be beneficial for future studies to utilise diagnostic measures in addition to self-reports. Another common issue was inappropriate use and/or reporting of statistical tests, and few studies provided effect estimates, confidence intervals, and exact p-values.

3.4.3 Implications

This systematic review has highlighted several implications for clinical and education practice, as well as for research. Results provide some evidence that emotional disorder is associated with poor school attendance. The strongest evidence was observed in relation to depression, which appears to be associated with overall absenteeism, unexcused absences/truancy, and school refusal. The observed associations between emotional disorder and truancy are surprising, since there is a long-held belief that while school refusal is associated with emotional disorder, truancy is associated with behavioural, but not emotional disorders (Berg et al., 1993; Elliott and Place, 2017; Kearney, 2008b). Findings presented in this chapter challenge this assumption, and highlight the need for clinical and educational professionals to be aware of potential emotional disorder, particularly depression, in CYP with poor attendance, regardless of the “type” of non-attendance.

The inconsistent use of terminology and methods of measuring school attendance problems (see Table 5) caused substantial difficulty in synthesising and comparing results across studies. This inconsistent use of terminology and methods has been recognised as a core problem by international researchers and practitioners in the field of school attendance research (Heyne et al., 2019a; Heyne et al., 2019b; International Network for School Attendance, 2019; Kearney, 2008b; Lauchlan, 2003; Pellegrini, 2007; see also Section 1.3.1 of this thesis). Attempts to consolidate the terms and establish clear definitions that are consistently applied, would be hugely beneficial both to research and practice.

Until such consensus is achieved, authors should make considered choices about their use of terminology and should explicitly describe the meaning they assign to their choice of terminology.

As well as highlighting areas of strongest evidence, this systematic review identified several research gaps. As previously discussed, the quality of included studies was variable, but poor overall. High-quality research that controls for potential confounds and utilises diagnostic assessments of emotional disorder instead of, or in addition to, self-reports, would strengthen the evidence-base. Secondly, there is an emphasis in the literature on unexcused absences or truancy, and a lack of attention has been paid to associations between emotional disorder and excused absences. Since the majority of school absences are excused/authorised (Department for Education, 2019c; Hancock et al., 2018), this is a topic that warrants further research. Somatic symptoms such as headaches, stomach aches and fatigue are common in CYP with emotional disorder, and these absences may be authorised by the school, particularly if interpreted by adults around the child as signs of physical illness rather than emotional distress.

Thirdly, the vast majority of research in this field has focused on cross-sectional associations. High quality research using longitudinal data would further our understanding of the direction of observed relationships. It is theoretically plausible for associations to be present in both directions (i.e. emotional disorder preceding poor school attendance, and vice versa). Research that explores bi-directional relationships between these constructs would have direct implications for clinical and education practice. For example, if emotional disorder precedes poor school attendance, then poor attendance may serve as a red flag for potential emotional disorder, and could be used to help identify individuals with unmet mental health needs. If poor school attendance precedes emotional disorder, it may suggest a need to offer additional mental health support to CYP who frequently miss school, for example those with chronic health conditions, and to support these individuals to remain engaged with education.

Finally, there were insufficient studies in this systematic review to investigate potential moderators of the association between emotional disorder and poor

school attendance, and this has also been neglected in primary research. Since emotional disorder and poor school attendance are both more frequently observed in adolescents than in younger children, it is possible that the relationship between them may also differ according to age, and future research should investigate this. It may be the case, for example, that emotional disorder is only associated with poor school attendance for children of a particular age, which would have important implications for those working in clinical and educational settings.

3.4.4 Conclusions

There is evidence to suggest positive associations between emotional disorder and poor school attendance, with the strongest evidence for associations between depression and overall absenteeism, unexcused absences/truancy, and school refusal. Similarly, the review suggests a relationship between emotional difficulties and overall absenteeism. However, these conclusions are undermined by the lack of high-quality research, limited longitudinal studies, a lack of data about the most common type of absence (excused/authorised absences), and no evidence regarding potential moderators of the relationship. There is also a pressing need for consensus regarding how best to define and measure poor school attendance.

3.5 Chapter summary

This chapter presented findings from a systematic review of the association between emotional disorder and school attendance. The next two chapters will present quantitative analyses of the 2004 and 2007 BCAMHS, which aim to address some of the limitations and research gaps identified by this systematic review.

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Chapter Four: Emotional disorder and absence from school: Findings from the 2004 British Child and Adolescent Mental Health Survey (Study Two)

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This chapter is the accepted version of the published manuscript. The Supplementary Material from this published manuscript can be found in Appendix Five.

4.1 Abstract

Background

Emotional disorder may be associated with absence from school, but the existing evidence is methodologically weak. We studied the relationships between anxiety, depression and emotional difficulties, and school absence (total, authorised and unauthorised) using data from the 2004 British Child and Adolescent Mental Health Survey (BCAMHS).

Method

The BCAMHS was a cross-sectional, community survey of 7977 five to 16 year olds. Emotional disorder was assessed using the Development and Wellbeing Assessment (DAWBA), and emotional difficulties using the Strengths and Difficulties Questionnaire (SDQ) completed by teachers and parents. Teachers reported days absent in the previous school term. Multivariable negative binomial regression was used to examine the impact of emotional disorder and difficulties on absence. Age, gender and general health were explored as moderators.

Results

Anxiety, depression and emotional difficulties were associated with higher rates of all types of absence (rate ratios for total absence: anxiety 1.69 (1.39 to 2.06) $p<0.001$; depression 3.40 (2.46 to 4.69) $p<0.001$; parent-reported emotional difficulties 1.07 (1.05 to 1.10) $p<0.001$; teacher-reported emotional difficulties 1.10 (1.08 to 1.13) $p<0.001$). The strongest association was observed for

depression and unauthorised absence. Relationships were stronger for secondary compared to primary school children.

Conclusions

Health and educational professionals should be aware that children with poor attendance may be experiencing emotional ill health, regardless of absence type. Absence may provide a useful tool to identify those who require additional mental health support. Findings highlight the widespread burden of emotional disorder and the need to support those with emotional ill health in continuing to access education.

Keywords

School attendance, absenteeism, truancy, emotional disorder, anxiety, depression

4.2 Introduction

Emotional disorders are among the most common psychiatric disorders in children and adolescents, with worldwide point prevalence estimates of 7% for anxiety and 3% for depression (Polanczyk et al., 2015). Both anxiety and depression are among the leading contributors to the burden of disease in children and adolescents worldwide (Mokdad et al., 2016). In addition to causing substantial distress, childhood emotional disorders are associated with a range of adverse outcomes including educational failure, physical health problems, risk-taking behaviour, adult mental illness, substance abuse and increased risk of suicide (Clayborne et al., 2019; Costello et al., 2005; Essau et al., 2000; Rutter et al., 2006; Weissman et al., 1999). Furthermore, onset of emotional disorder during childhood or adolescence is associated with greater functional impairment in a range of domains compared to adult-onset disorder (Zisook et al., 2007). Despite this, approximately 80% of children and adolescents with emotional disorders do not access services; a figure greater than that observed for other psychiatric disorders (Collins et al., 2004; Ford et al., 2007).

The UK government's recent Green Paper recognises the important role that schools have to play in identifying mental ill health at an early stage, supporting students who are experiencing difficulties, and referring to specialist support

services where necessary (Department of Health & Department for Education, 2017). However, a 2018 report by the UK Department for Education found that only three out of 90 (3%) schools surveyed had policies in place specifically regarding students' mental health. Furthermore, those that did have policies in place used disruptive behaviour as their main way of identifying students with mental health needs (Brown, 2018), which is most likely to miss those with internalising problems such as depression or anxiety. Furthermore, universal screening approaches for the identification of emotional disorder in schools produce a high number of false positives and may lack efficiency (Anderson et al., 2019). Therefore, new ways are needed to identify children and adolescents with emotional ill health.

Previous studies have suggested that poor school attendance may be a sign of emotional disorder (Egger et al., 2003; Gase et al., 2014; Vaughn et al., 2013), and a recent systematic review concluded that anxiety and depression are associated with higher rates of school absence (Finning et al., 2019b; Finning et al., 2019c). However, that systematic review identified substantial weaknesses with the current evidence-base, including poor methodological quality, a lack of comprehensive studies in UK populations, and few studies that have reported associations with authorised or excused absences, despite this being the most common type of absence. In addition, few studies have investigated the relationship for different subgroups of children such as those of a particular age, or for girls compared to boys, and there have been no formal moderator analyses that we are aware of. Age, in particular, should be investigated as a moderator, given that the prevalence of emotional disorder and the rate of school absence are greater in adolescents compared to younger children (Department for Education, 2018a; Ford et al., 2003; Green et al., 2005).

A complicating factor in the field of school attendance is the widespread lack of consensus regarding terminology and definitions. For example, truancy may refer to pupils who are absent due to a lack of interest in school or defiance of authority and who attempt to conceal the absence from their parents, which is commonly assumed to be related to externalising disorders. Researchers and policy-makers, however, frequently use truancy to refer to unauthorised absences in general (Gentle-Genitty et al., 2015; Heyne et al., 2019b; Hunt and

Hopko, 2009; Vaughn et al., 2013). In contrast with truancy, school refusal is commonly used to describe pupils who miss school due to anxiety or emotional distress and who do not typically attempt to conceal the absence from their parents.

However, research has shown that school refusal and truancy are not mutually exclusive (Egger et al., 2003), and some researchers call for use of broader terms that do not make assumptions about the underlying aetiology of the problem (Lauchlan, 2003; Pellegrini, 2007). In education policy and practice absences are commonly separated into authorised and unauthorised absences (Department for Education, 2018a), and the dataset used in the present study utilises this framework. However it is important to note that authorised and unauthorised absences may also be subject to inconsistencies. For example, it is likely that the decision to authorise (or not) an absence will vary between schools and between individual staff members. Given that standardised definitions of authorised and unauthorised absence exist (Department for Education, 2018b), we consider that such inconsistencies are likely to be less impactful than for other terms such as truancy and school refusal.

We undertook a secondary analysis of the 2004 British Child and Adolescent Mental Health Survey (BCAMHS) (Green et al., 2005), which is a large, nationally-representative dataset that spans from five to 16 years. Although previous research has suggested that behavioural disorders are also related to school absence, particularly unauthorised absence or truancy (Hendron and Kearney, 2016; Nik Jaafar et al., 2013), the present study focuses on anxiety and depression because these disorders are so frequently unrecognised by adults around the child, particularly in education settings (Parker et al., 2018). The BCAMHS benefits from having diagnostic measures of emotional disorder in addition to measures of emotional symptoms and school absence. We predicted that anxiety, depression and emotional difficulties would be associated with higher rates of total, authorised and unauthorised school absence. In addition, we explored gender, age and general health as moderators of these associations.

4.3 Methods

The original BCAMHS surveys had approval from Medical Research Ethics Committees (MRECs), and ethical approval for this secondary analysis was granted by the University of Exeter Medical School Ethics Committee. Full details of the methods and sampling frame for the 2004 BCAMHS is available elsewhere (Green et al., 2005), but a summary is provided here.

4.3.1 Sample

The BCAMHS involved a representative sample of children and young people aged 5-16 years, living in private households in Great Britain, sampled via the Child Benefit register. In 2004 Child Benefit was available to all British parents on a per-child basis, and had nearly complete take-up. Four hundred and twenty-six postal sectors were sampled by the Office for National Statistics, with a probability related to the size of the sector, and stratified by regional health authority and social economic group. A target sample of 12294 children was selected and, after removing those addresses that opted out or were ineligible, 10496 families were approached, and 7977 completed a baseline interview (see Figure 19). The BCAMHS used a multi-informant model, with parents (N=7977) and children aged 11 years and above (N=3344) completing a face-to-face interview, and a postal questionnaire sent to teachers where parents gave consent (N=6236).

4.3.2 Measures

Anxiety and depression

The Development and Wellbeing Assessment (DAWBA) was used to assess the presence of psychiatric disorders according to criteria in Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV) (American Psychiatric Association, 1994). The DAWBA is a validated standardised diagnostic interview that combines structured and open-ended questions (Ford et al., 2003; Goodman et al., 2000; Green et al., 2005). The structured questions relate to DSM-IV diagnostic criteria, and these are complemented with open-ended questions and supplementary prompts where problems are identified.

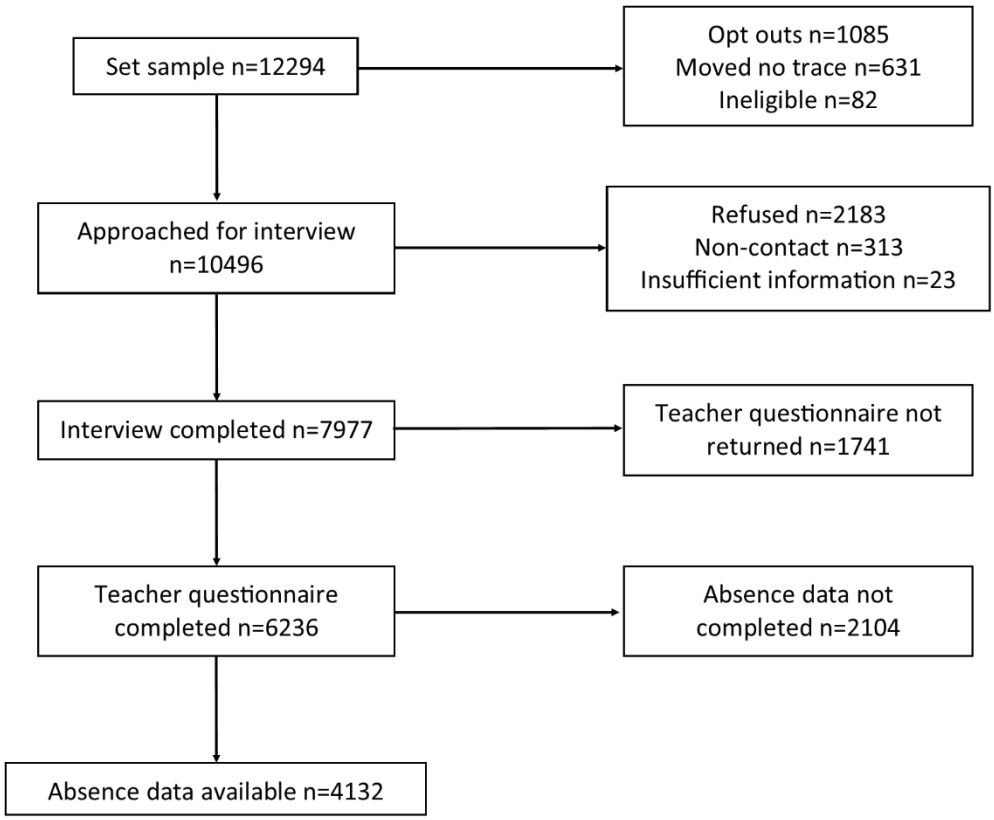

Figure 19. Flow diagram showing recruitment to the 2004 British Child and Adolescent Mental Health Survey

In the 2004 BCAMHS the DAWBA was completed by parents, children aged 11 or over, and if the family agreed, the child's teacher. Computer-generated summaries and predictions of likely psychiatric diagnoses were reviewed by a small group of experienced clinical raters, who could accept or overturn the computer-generated diagnoses. Clinical raters worked independently, with regular group discussion of difficult or borderline cases. The aim of the DAWBA is to replicate the process of clinical diagnosis as closely as possible (Ford et al., 2003). The κ statistic for chance-corrected agreement between two clinicians who independently rated 500 children was 0.86 for any disorder (standard error [SE] 0.04), 0.57 for internalising disorders (SE 0.11), and 0.98 for externalising disorders (SE 0.02) (Ford et al., 2003). A validation study demonstrated excellent discrimination between community and clinical samples in rates of diagnosed disorder, and substantial agreement between DAWBA and case note diagnoses in the clinical sample (Goodman et al., 2000). For the purposes of the current study, we used diagnosis of any anxiety disorder and diagnosis of any depressive disorder according to DSM-IV criteria.

Emotional difficulties

Emotional difficulties were measured in the BCAMHS using the Strengths and Difficulties Questionnaire (SDQ), which is a validated questionnaire that screens for common childhood psychopathology (Cronbach alpha 0.73, test-retest reliability 0.62; (Goodman, 2001)). The SDQ comprises 25 items in five subscales: emotional problems, conduct problems, hyperactivity, peer problems, and prosocial behaviour. In the 2004 BCAMHS all parents, teachers and children over 11 years were invited to complete the SDQ. For the purposes of the current study, the emotional problems subscale, as reported by parents and teachers, was used. We did not include child-reported SDQ scores due to extensive missing data when combined with teacher-reported absence (see "Missing data" below).

The emotional problems score ranges from zero to ten, with a higher score reflecting greater difficulties. A four-band categorisation has been created, which classifies scores as "close to average" (approximately 80% of the population), "slightly raised" (10% of the population), "high" (5% of the population), and "very high" (5% of the population) (Youth in Mind, 2014). For this study we used emotional difficulties as a continuous measure for the main analyses, but in order to improve statistical power for moderator analyses, the four-level categorical variable was used.

School absence

When the parent and, if appropriate, child interviews were completed, parents were asked for consent to contact the child's teacher, and nominated the teacher they felt knew the child best. Questionnaires asked teachers to report, to the nearest half day: (1) "How many days was the child absent during the last whole term?" and (2) "Of these absences, how many were unauthorised absences?" No definition of "unauthorised absences" was provided, but this is generally considered to mean any absence for which the school is not satisfied with the reason given (Department for Education, 2018b). For the current study, authorised absences were calculated by subtracting unauthorised from total absence. Authorised absence means that the school has either given approval in advance, or has accepted an explanation offered afterwards as justification

for the absence, and includes illness, medical appointments, religious occasions and other exceptional circumstances (Department for Education, 2018b).

Of the 6236 teacher questionnaires completed, 4132 answered at least one of the two absence questions, and 4024 answered both. Nine teachers reported the number of absences to be far in excess of the maximum number of days in any school term. A search of the Department for Education website (https://www.gov.uk/school-term-holiday-dates) suggested that schools rarely exceed 70 days of teaching in the spring term, when the majority of BCAMHS data was collected. The maximum number of absences was therefore limited to 70, and observations greater than this (n=9) were recorded as missing.

Background and sociodemographic characteristics

Background information collected included the child's age, gender, ethnicity, number of stressful life events (e.g. death of a friend or family member, parental marital separation), mother's highest educational qualification, and family structure (traditional, single-parent, reconstituted or other). Housing tenure was used as a measure of socioeconomic status and, in line with previous work (Ford et al., 2018), was categorised according to whether families owned or rented their home. Learning difficulty was assessed by asking parents and teachers to estimate the child's mental age as a percentage of their chronological age. Children were deemed to have a severe, moderate, borderline, or no learning difficulty if their parent or teacher estimated their mental age to be 40% or less, 60% or less, 80% or less, or more than 80% of their chronological age, respectively (Liddle et al., 2009). Parental mental health was assessed using the 12-item General Health Questionnaire (Goldberg, 1988), and parents were asked to rate their child's general health on a five-point scale from very good to very bad.

4.3.3 Analysis

Analysis was conducted using Stata/SE 14.2 (StataCorp, 2015). Absence and background information for children with no psychiatric disorder, any anxiety disorder, and any depressive disorder, were summarised using means and standard deviations for continuous variables, and numbers and percentages for

categorical variables. These groups were not mutually exclusive, since some children had both an anxiety and depressive disorder.

Main analyses

Negative binomial regression was used to investigate the associations between emotional disorder (assessed via the DAWBA) and emotional difficulties (assessed via the SDQ) as exposure variables, and total, authorised and unauthorised school absence as outcome variables. Negative binomial (rather than Poisson) regression, and robust standard errors, were used due to over-dispersion in the data (Hilbe, 2014). Potential confounders were identified from previous literature and theory, and were tested in a single multivariable model with absence as the outcome. Those variables that were significant predictors at the 5% level were included as confounders in final multivariable models, and these were: age, gender, ethnicity, housing tenure, mother's highest educational qualification, learning difficulty, stressful life events, and family type. We conducted a sensitivity analysis to determine the impact of including two additional variables that were not included in our primary analyses as we believed they might lie on the causal pathway between emotional disorder and school absence (parental mental health and child's general health).

Moderator analyses

After conducting our main analyses as described above, moderator analyses were conducted by including interaction terms in univariable and multivariable negative binomial regression models. Multivariable models included all confounders used in the main analyses. For each moderator, Wald tests were used to determine the statistical significance of the interaction term and, if statistically significant, the main analysis was repeated separately for each subgroup of the moderator.

The following variables were specified *a priori* as potential moderators:

- Gender
- School level (primary or secondary): used as a proxy for age. This was derived using the child's age and month of birth, with children classed as "primary" if they were in school years reception to six (ages 5 to

11), and “secondary” if they were in school years seven to eleven (ages 11 to 16).

- General health: Given the lack of previous research in this regard, we believed it possible that general health could be either a moderator or mediator of the association between emotional disorder and school absence. We tested general health as a moderator, collapsed into a binary variable (*very good or good* versus *fair, bad or very bad*) due to no or few participants with anxiety or depression in some categories of the original five-level variable.

Missing data

There was a substantial amount of missing data for our main outcome variables (48.2% missing for total, 49.6% for unauthorised, and 49.7% for authorised absence), and we therefore used multiple imputation on the assumption that data were missing at random (MAR) according to Rubin’s rules, i.e. that missingness was accounted for by other variables within the dataset (Rubin, 1976). Multiple imputation adjusts for the bias and loss of statistical power that occurs in analyses restricted to participants with complete data (Sterne et al., 2009). Missing data were imputed using the chained equations approach with Stata’s *mi impute chained* command. Predictive mean matching, in which imputed values are sampled only from the observed values, was used to impute absence and emotional difficulties scores, since these variables were not normally distributed (White et al., 2011). Fifty imputed datasets were created as per good-practice guidelines to impute 100 times the fraction of missing information (White et al., 2011).

Variables used to impute missing data included all exposures, outcomes and confounders, as well as family functioning measured with the McMaster Family Activity Device (Miller et al., 1985), mother’s age when the child was born, teacher-reported age level of the child, household income, whether the child felt picked on by a teacher, whether the child had any physical disorder, and if a parent had experienced a serious physical or mental condition since the child’s birth. A sensitivity analysis was performed by repeating all analyses with complete cases only. Moderator analysis was performed using only complete case data, as it was not possible to include interaction terms in the imputation

model due to there being no or very few cases with emotional disorder in some variable levels.

4.4 Results

4.4.1 Sample characteristics

Of the 7977 children in the sample, 7213 (90.4%) had no psychiatric disorder, 263 (3.3%) had an anxiety disorder, and 68 (0.9%) had a depressive disorder. These groups are not mutually exclusive since 38 children (0.5%) had both an anxiety and depressive disorder. The remaining 471 children (5.9%) had a disorder other than anxiety or depression and are not included in this analysis. Table 14 summarises the characteristics of children according to their disorder status. Children and adolescents with anxiety had a greater mean number of teacher-reported total, authorised and unauthorised absences than those with no disorder, and children and adolescents with depression had an even greater number of absences. Children for whom absence data were missing differed in several domains to those for whom absence data were available (see Supplementary Material), but bias was minimised by including all of these variables in multiple imputation models (Sterne et al., 2009).

4.4.2 Main analyses

Table 15 provides results of regression models comparing the rate of teacher-reported absence between disorder and no disorder groups, as well as the rate of absence for each one-point increase on the SDQ emotional difficulties scale. Sensitivity analysis using only cases with complete data demonstrated similar effect estimates to those produced with multiply imputed data, but the latter resulted in more precise estimates (i.e. narrower confidence intervals). Therefore, results presented here are those obtained from analysing imputed data, but results from complete case analysis are available in Supplementary Material. Sensitivity analysis was also performed to test the impact of including parental mental health and child's general health as confounders. Including these variables resulted in minor reductions in effect estimates but did not change the overall conclusions. Results presented here are from analyses that were not adjusted for parental mental health or child's general health.

Table 14. Characteristics of children with no psychiatric disorder, any anxiety disorder, and any depressive disorder

	No disorder (N=7213)	Any anxiety disorder (N=263)	Any depressive disorder (N=68)
School absence [a]: Mean (SD)			
Total	3.8 (5.9)	8.1 (10.8)	17.5 (16.2)
Authorised	3.3 (5.1)	6.7 (9.1)	10.1 (11.1)
Unauthorised	0.44 (2.4)	1.5 (6.0)	7.4 (4.2)
Age in years: Mean (SD)	10.5 (3.4)	11.6 (3.4)	13.4 (2.5)
Gender: n (%)			
Male	3641 (50.5)	118 (44.9)	25 (36.8)
Female	3572 (49.5)	145 (55.1)	43 (63.2)
Ethnicity: n (%)			
White	6232 (86.5)	232 (88.2)	60 (88.2)
Ethnic minority	977 (13.5)	31 (11.8)	8 (11.7)
Housing tenure: n (%)			
Own home	5268 (73.1)	130 (49.4)	35 (51.5)
Rented	1940 (26.9)	133 (50.6)	33 (48.5)
Mother's highest qualification: n (%)			
Degree or diploma	1954 (27.8)	36 (14.2)	14 (21.2)
A-level or good GCSE	2969 (42.2)	91 (36.0)	18 (27.3)
Poor GCSE or other	932 (13.3)	43 (17.0)	11 (16.7)
None	1174 (16.6)	83 (32.8)	23 (34.8)
Learning difficulty: n (%)			
No	6677 (93.1)	196 (75.4)	52 (77.6)
Borderline, moderate or severe	493 (6.9)	64 (24.6)	15 (22.4)
Stressful life events: Mean (SD)	0.9 (1.1)	2.0 (1.5)	2.3 (1.1)
Family structure: n (%)			
Traditional	4770 (66.1)	111 (42.2)	26 (38.2)
Single-parent, reconstituted, or other	2443 (33.9)	152 (57.8)	42 (61.8)
Child's general health: n (%)			
Very good or good	6762 (93.7)	212 (80.6)	45 (66.2)
Fair, bad or very bad	344 (4.8)	49 (18.6)	22 (32.4)
Parental mental health [b]: Mean (SD)	1.4 (2.5)	4.0 (3.9)	5.1 (4.2)

[a] Absence refers to the number of days absent in the previous whole school term, as reported by teachers. [b] Parental mental health was assessed using the General Health Questionnaire, a screening questionnaire for psychiatric disorder in the general population; higher scores reflect more symptoms. Based on 7977 initial sample; 7213 children had no psychiatric disorder, 263 had an anxiety disorder and 68 had a depressive disorder. Thirty-eight children had both anxiety and depression, hence these two columns are not mutually exclusive.

Table 15. Rate of school absence according to emotional disorder status and parent- and teacher-reported emotional difficulties scores

	TOTAL ABSENCE		AUTHORISED ABSENCE		UNAUTHORISED ABSENCE	
	Rate ratio & 95% CI	**p-value**	**Rate ratio & 95% CI**	**p-value**	**Rate ratio & 95% CI**	**p-value**
Anxiety disorder						
Unadjusted:	2.21 (1.82 to 2.67)	<0.001	2.03 (1.67 to 2.47)	<0.001	3.52 (1.94 to 6.39)	<0.001
Adjusted:	1.69 (1.39 to 2.06)	<0.001	1.61 (1.32 to 1.97)	<0.001	2.23 (1.19 to 4.15)	0.012
Depressive disorder						
Unadjusted:	4.59 (3.41 to 6.17)	<0.001	3.13 (2.18 to 4.51)	<0.001	16.55 (9.03 to 30.32)	<0.001
Adjusted:	3.40 (2.46 to 4.69)	<0.001	2.39 (1.63 to 3.50)	<0.001	11.24 (5.40 to 23.39)	<0.001
Parent-reported emotional difficulties						
Unadjusted:	1.11 (1.08 to 1.13)	<0.001	1.10 (1.08 to 1.12)	<0.001	1.14 (1.07 to 1.21)	<0.001
Adjusted:	1.07 (1.05 to 1.10)	<0.001	1.07 (1.05 to 1.09)	<0.001	1.08 (1.00 to 1.15)	0.048
Teacher-reported emotional difficulties						
Unadjusted:	1.13 (1.10 to 1.15)	<0.001	1.12 (1.09 to 1.14)	<0.001	1.20 (1.12 to 1.28)	<0.001
Adjusted:	1.10 (1.08 to 1.13)	<0.001	1.09 (1.07 to 1.12)	0.008	1.13 (1.06 to 1.22)	0.001

Based on 7977 initial sample; 7213 children had no psychiatric disorder, 263 had an anxiety disorder and 68 had a depressive disorder. Anxiety and depression are binary predictors; emotional difficulties are continuous scores ranging from 0 to 10 and hence the rate ratios represent the increase in rate of absence per one-point increase on the emotional difficulties scale. Adjusted estimates are adjusted for age, gender, ethnicity, housing tenure, mother's highest educational qualification, learning difficulty, stressful life events, and family type. CI – confidence interval.

Anxiety and depression as predictors of school absence

Children with any anxiety disorder had a higher rate of total (adjusted incident rate ratio (IRR) 1.69, 95% CI 1.39 to 2.06, p<0.001), authorised (adjusted IRR 1.61, 95% CI 1.32 to 1.97, p<0.001) and unauthorised (adjusted IRR 2.23, 95% CI 1.19 to 4.15, p=0.01) teacher-reported absences compared to children with no disorder. The association for depression was even greater, with the rate of total (adjusted IRR 3.40, 95% CI 2.46 to 4.69, p<0.001), authorised (adjusted IRR 2.39, 95% CI 1.63 to 3.50, p<0.001), and unauthorised (adjusted IRR 11.2, 95% CI 5.4 to 23.4, p<0.001) absences higher than for those with no disorder.

Parent-reported emotional difficulties as a predictor of school absence

Higher scores on the parent-reported emotional difficulties subscale of the SDQ were associated with a higher rate of all three types of absence. These relationships remained statistically significant after adjusting for confounders (IRR for total absence 1.07, 95% CI 1.05 to 1.10, p<0.001; authorised absence 1.07, 95% CI 1.05 to 1.09, p<0.001; unauthorised absence 1.08, 95% CI 1.00 to 1.15, p=0.048). These rate ratios refer to the increase in the rate of teacher-reported absence per one-point increase on the parent-reported emotional difficulties scale.

Teacher-reported emotional difficulties as a predictor of school absence

Higher scores on the teacher-reported emotional difficulties subscale of the SDQ were also associated with higher rates of all three types of absence, both in unadjusted and adjusted analyses (adjusted IRR for total absence 1.10, 95% CI 1.08 to 1.13, p<0.001; authorised absence 1.09, 95% CI 1.07 to 1.12, p=0.008; unauthorised absence 1.13, 95% CI 1.06 to 1.22, p=0.001). These rate ratios refer to the increase in the rate of absence per one-point increase on the teacher-reported emotional difficulties scale.

4.4.3 Moderator analyses

Results from all tests of interaction are provided in Supplementary Material, and a summary of pertinent findings is presented here.

Gender

There was no evidence that gender moderated the relationship between any of our predictors and outcomes (all p-values > 0.1).

School level

School level, used as a proxy for age, was a statistically significant moderator of the following associations:

(a) Depression and authorised absence (adjusted interaction test p<0.001). Subgroup analysis demonstrated a stronger relationship for secondary (adjusted IRR 2.29, 95% CI 1.49 to 3.52) than for primary (adjusted IRR 0.20, 95% CI 0.06 to 0.69) school children (see Figure 20).

(b) Parent-reported emotional difficulties and total absence (adjusted interaction test p=0.04). Subgroup analysis again demonstrated a stronger relationship for secondary than for primary school children, particularly for children whose parents scored them “very high” (adjusted IRR primary: 1.10, 95% CI 0.80 to 1.53; secondary: 1.74, 95% CI 1.32 to 2.29) or “high” (adjusted IRR primary: 1.31, 95% CI 1.07 to 1.60; secondary: 1.70, 95% CI 1.34 to 2.17) on the emotional difficulties scale (see Figure 20).

(c) Parent-reported emotional difficulties and unauthorised absence (adjusted interaction test p=0.003). Subgroup analysis demonstrated a stronger relationship for secondary compared to primary school children, although in this case the difference between school levels was most pronounced for children whose emotional difficulties scores were “slightly raised” (primary: adjusted IRR 0.34, 95% CI 0.15 to 0.77; secondary: adjusted IRR 1.66, 95% CI 0.86 to 3.23) (see Figure 20).

Overall, these moderator analyses suggest that the association between emotional disorder and school absence may be greater for secondary compared to primary school students.

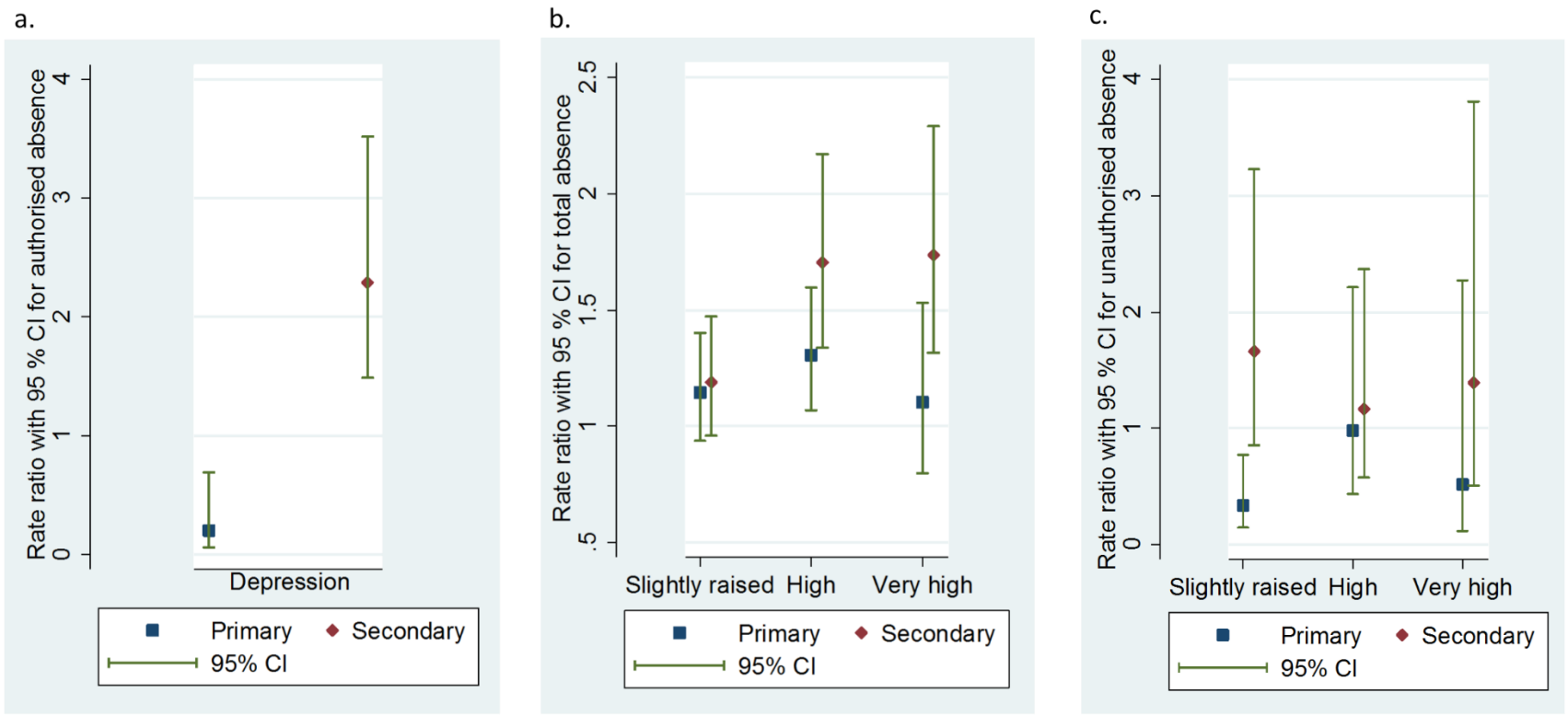

Figure 20. School level status (primary versus secondary) as a moderator of the associations between: (a) depression and authorised absence; (b) parent-reported emotional difficulties and total absence; (c) parent-reported emotional difficulties and unauthorised absence.

NB. Graph (a) displays rate ratios for authorised absence comparing children with depression to those with no psychiatric disorder; graph (b) displays rate ratios for total absence comparing children with slightly raised, high and very high emotional difficulties scores to those with close to average scores; graph (c) displays rate ratios for unauthorised absence comparing children with slightly raised, high and very high emotional difficulties scores to those with close to average scores.

General health

General health was a statistically significant moderator of the relationship between teacher-reported emotional difficulties and unauthorised absence (adjusted interaction test p<0.001). Subgroup analysis demonstrated that the association was greater for children with good health compared to those with bad health. The difference in subgroups was particularly pronounced for children whose teacher scored them "high" on the emotional difficulties subscale (good health: adjusted IRR 2.42, 95% CI 1.31 to 4.47; bad health: adjusted IRR 0.14, 95% CI 0.04 to 0.55) (see Figure 21).

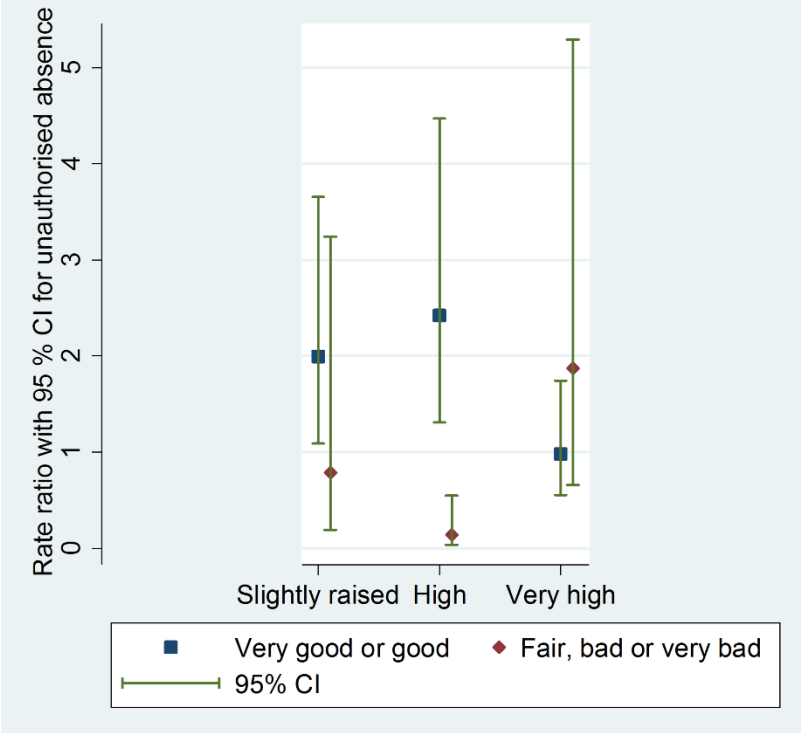

Figure 21. Graph to show general health (very good or good versus fair, bad or very bad) as a moderator of the association between teacher-reported emotional difficulties and unauthorised absence.

NB. Graph displays rate ratios for children with slightly raised, high or very high, compared to close to average emotional difficulties scores.

4.5 Discussion

We found evidence for associations between anxiety, depression and emotional difficulties with total, authorised and unauthorised absences in UK children and adolescents aged 5 to 16. All four measures of emotional disorder/difficulties

were associated with an increased risk of all three types of school absence. These findings were in line with our expectations and previous evidence (Egger et al., 2003; Finning et al., 2019b; Finning et al., 2019c; Gase et al., 2014; Vaughn et al., 2013).

This was the first study to demonstrate consistent relationships across all types of school absence (total, authorised and unauthorised) and several measures of emotional disorder. That said, the associations were greater for unauthorised compared to authorised absences, particularly in relation to depression, where children and adolescents with depression had eleven times the rate of unauthorised absence in the previous school term compared to their peers with no psychiatric disorder. The extent of this relationship is surprising given the long-held belief that unauthorised absence is associated with behavioural disorders rather than anxiety or depression (Berg et al., 1993; Elliott and Place, 2017). Although eighteen (26.5%) of the 68 children with depression in this sample also had a conduct or oppositional disorder, the majority of them did not, and thus it is unlikely that the association between depression and unauthorised absence is simply a result of comorbid behavioural disorders. These findings are also in line with a recent systematic review that reported particularly strong evidence with regards to depression and unexcused absence or truancy (Finning et al., 2019c).

It is interesting that associations with all three measures of absence were greater for depression compared to anxiety, a finding that replicates those from previous research (Egger et al., 2003; Gase et al., 2014; Ingul et al., 2012; Jones et al., 2009). It is possible that symptoms of depression such as difficulties with concentration and lack of motivation lead to greater impairments in education compared to symptoms of anxiety. A previous study demonstrated that the majority of young people (78%) with high symptoms of anxiety do not meet Kearney's criteria for problematic absenteeism (i.e. miss at least 25% of school time for at least 2 weeks, experience difficulty attending classes for at least 2 weeks with significant interference with the child's routine, and are absent for at least 10 days during any 15-week period) (Ingul and Nordahl, 2013). It may be that young people with anxiety, compared to those with depression, are more able to continue attending regularly despite their

symptoms. However, it is important to note that the present study did not compare rates of absence for those with depression versus anxiety, and future research designed to make this direct comparison would help to further our understanding in this respect.

Findings suggest that parents, clinicians and school staff should be aware that high rates of school absence, whether authorised or unauthorised, may be a sign of underlying emotional ill health, requiring assessment and, if necessary, intervention or referral to more specialist services. Importantly, health and education professionals should not assume that unauthorised absence is necessarily a signifier of behavioural difficulties, but may also indicate that a young person is experiencing anxiety and/or depression.

Given the UK government's recent proposals for schools to play a greater role in supporting students' mental health (Department of Health & Department for Education, 2017), our findings suggest that school attendance could serve as a simple and easy method for identifying students who may be experiencing emotional ill health. However, there are no studies that we are aware of that have explicitly investigated the effectiveness of attendance data to identify emotional disorders in school settings. Given that universal screening approaches produce a high number of false positives (Anderson et al., 2019), this is an important topic for future research.

Both parent- and teacher-reported SDQ emotional difficulties scores were associated with school absence. The SDQ may be used by schools as a universal screening tool for the identification of students with mental health difficulties (Brown, 2018; Dowdy et al., 2010), but our findings also support a more targeted approach in which it is used to screen students with poor attendance, in order to identify those who may be experiencing mental health difficulties. This is especially important with respect to emotional disorder, given the low rates of treatment utilisation (Collins et al., 2004; Ford et al., 2007) and that schools commonly use disruptive behaviour as their primary way of identifying students with mental health problems (Brown, 2018), which is likely to lead to under-recognition of anxiety and depression. Our findings also highlight the burden of childhood emotional disorder beyond healthcare settings, having the potential to adversely impact educational outcomes.

Frequent absence from school is itself associated with a range of adverse consequences including poor academic outcomes, social isolation, economic deprivation and future unemployment (Attwood and Croll, 2014; Credé et al., 2010; Kearney et al., 2001), and thus it is crucial that steps are taken to support children and adolescents experiencing emotional ill health to continue to access education.

Our moderator analyses provided no evidence that these associations are different for boys and girls. There was, however, evidence that the association may differ according to age. Specifically, the associations between a) depression and authorised absence, b) parent-reported emotional difficulties and total absence, and c) parent-reported emotional difficulties and unauthorised absence, were greater for secondary- than for primary-school students. There is evidence that somatic symptoms related to emotional disorders are more common with increasing age (Campo, 2012; Cottrell, 2016), and it may be that somatic symptoms result in greater school absence for adolescents compared to younger children with these disorders. However, general health was only a statistically significant moderator for teacher-reported emotional difficulties predicting unauthorised absence, and not for any other of our measures of emotional disorder or absence. It therefore seems unlikely that the moderator effect observed for age is driven by differences in somatic symptoms. It is, however, possible that emotional disorder has less of an impact on school attendance for younger children because their attendance is largely determined by parents/carers, whereas adolescents may have greater ownership over their own attendance.

It is unclear why the association between teacher-reported emotional difficulties and unauthorised absence would be greater for children with good compared to bad health. It is possible that for children whose general health is poor, their difficulty attending school may be attributed by those around them to their general health, and such absences may be more likely to be authorised. However, general health was not found to moderate the association between any of our emotional disorder measures and authorised absences, so this seems unlikely.

4.5.1 Strengths and limitations

This was the first study to comprehensively investigate the association between emotional disorder and school absence in a UK population of children and adolescents, and we addressed many of the limitations of previous research. The BCAMHS benefits from a large, nationally-representative sample spanning the entire age range of compulsory education in the UK, and the use of clinical diagnoses in addition to multi-informant symptom questionnaires is a strength. A population survey such as this has the additional strength that it is likely to have included children with the full spectrum of school attendance, as opposed to studies that have relied on school-based data collection, which is likely to exclude those with the poorest attendance. This was the first study that we are aware of to formally investigate gender, age and general health as moderators of the association between emotional disorder and school absence, enabling us to report on the effects for subgroups of the population. Our models adjusted for several factors known to be associated with school absence, minimising the likelihood that the effects were due to confounding.

Despite the large initial sample of the BCAMHS, absence was teacher-reported and thus there was substantial missing data for our main outcome measures, and exploration of missing data established that missingness was not completely at random. However, we used multiple imputation to overcome the bias inherent with such missingness (Sterne et al., 2009). We were unable to use multiple imputation for our moderator analyses because the introduction of interaction terms to the imputation model affected its stability, due to small case numbers in individual levels of several variables. However, given that sensitivity analysis for our main effects demonstrated that multiple imputation improved the precision of effect estimates but did not substantially change the estimates, we consider it unlikely that performing the moderator analyses with imputed data would have resulted in alternative conclusions.

We reported findings separately for total, authorised and unauthorised absences, allowing us to draw conclusions in relation to subtypes of absence as well as absence overall. The use of teacher-reported absence data could be considered a strength in comparison to previous research which has tended to use child-reports, which may be less reliable. However, it is unclear to what

extent teachers in the BCAMHS used administrative data rather than relying on recall to complete absence information. The lack of definition provided to teachers regarding unauthorised absence is also a limitation, and it is possible that teachers were unaware of the standard definition for unauthorised absence utilised by the Department for Education, and that the decision to record an absence as unauthorised may differ between schools and between individual teachers. Furthermore, because teachers did not report the total number of available days, we selected a maximum number (N=70) that we considered reasonable for any school term, however for some individuals this will have been an over- or under-estimate. It is likely that all methods of measuring school absence introduce some degree of bias, and future research should ideally utilise multiple methods to reduce the impact of measurement error.

A final important limitation of the current study is the cross-sectional nature of the data. Thus we were only been able to demonstrate associations between emotional disorder and school absence and cannot draw any conclusions about the direction of the relationships, nor can we make any claims regarding causality. There have been few longitudinal studies to explore this relationship (Burton et al., 2014; Wood et al., 2012), and none that we are aware of that have explored anxiety and depression as predictors of subsequent absence, as well absence as a predictor of subsequent anxiety and depression. Future research utilising longitudinal data would help to establish whether absence or emotional ill health comes first.

4.5.2 Conclusions

We found evidence of associations between several measures of emotional disorder and absence from school. Clinical and educational professionals should be aware that a child with poor attendance may be experiencing underlying emotional ill health, whether or not those absences are authorised or unauthorised. School absence may be a useful tool to identify children and adolescents who are experiencing emotional difficulties; a group who are commonly under-recognised. Furthermore, our findings highlight the widespread burden of emotional disorder and the need to support children and adolescents with emotional ill health to continue to access education.

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Conflict of interest

The authors have no conflicts of interest to declare.

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Chapter Five: Is there a bi-directional relationship between emotional disorder and absence from school? A secondary analysis of the British Child and Adolescent Mental Health Surveys 2004 and 2007 (Study Three)

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This chapter is the version of the manuscript submitted for publication. The Supplementary Material from this manuscript can be found in Appendix Six.

5.1 Abstract

Background

Previous research has identified cross-sectional associations between emotional disorder and school absence, but longitudinal evidence is lacking. We investigated bi-directional longitudinal relationships between emotional disorder/difficulties and total, authorised and unauthorised school absence in the 2004 British Child and Adolescent Mental Health Survey (BCAMHS) and its 2007 follow-up.

Methods

The BCAMHS was a community survey of 7,977 5-16 year olds, of whom 5,326 completed a follow-up. Emotional disorder was assessed using the Development and Wellbeing Assessment (DAWBA), and emotional difficulties using the Strengths and Difficulties Questionnaire (SDQ). Teachers reported days absent in the previous term. Negative binomial, logistic and linear regression were used to investigate the impact of (a) baseline emotional disorder/difficulties on absence at follow-up, and (b) baseline absence on emotional disorder/difficulties at follow-up.

Results

After adjusting for confounders, baseline depressive disorder and teacher-reported emotional difficulties were associated with an increased rate of unauthorised absence at follow-up. Baseline depressive disorder was also

associated with an increased rate of total absence at follow-up. Baseline total and authorised absence predicted higher parent- and teacher-reported emotional difficulties at follow-up.

Conclusions

There is evidence for a bi-directional relationship between emotional disorder/difficulties and school absence, but these were inconsistent between different types of emotional difficulties and absence. Depression appears to be more predictive of absence, particularly unauthorised, than anxiety. Findings emphasise the importance of timely intervention for young people experiencing difficulties in either of these domains. Attendance data may serve as a helpful component of school-based mental health screening.

5.2 Introduction

Anxiety and depression are increasingly common mental disorders in young people, with point prevalence estimates of 7% for anxiety and 2% for depression in a recent survey of 5-19 year-olds in the UK (Vizard et al., 2018). These emotional disorders are leading contributors to the burden of disease in young people (Gore et al., 2011). They are associated with a range of adverse outcomes including poor educational performance, physical health problems, and risk-taking behaviour, as well as an increased risk of suicide and poor mental health in adulthood (Costello et al., 2005; Essau et al., 2000; Rutter et al., 2006). Despite this, the majority of young people with emotional disorders do not access mental health services (Ford et al., 2007; Merikangas et al., 2010) and the quality of care received by those that do is variable (Care Quality Commission, 2017).

The UK government has proposed a system of greater integration between mental health and education, with schools recognised as a key setting for the identification, prevention and management of mild-to-moderate mental health problems like anxiety and depression (Department of Health & Department for Education, 2017). However, teachers report feeling insufficiently trained to respond to mental health needs, and evidence shows that they are poor at identifying those with mental health problems, particularly emotional disorders (Cunningham and Suldo, 2014; Parker et al., 2018). Evidence-based mental

health screening approaches in schools may help to identify young people with unmet emotional needs and allow for more timely intervention.

Previous research has demonstrated that anxiety and depression are associated with higher rates of school absence (Egger et al., 2003; Finning et al., 2019a; Ingul et al., 2012; Lereya et al., 2019), which suggests that absence data may serve as a helpful component of school-based screening approaches. However, school attendance research suffers from inconsistent use of terminology and measurement methods, which makes comparison between studies difficult (Heyne et al., 2019b). “Truancy” may refer to young people who miss school due to a lack of interest or defiance of authority, and who attempt to conceal the absence from their parents (e.g. Egger et al. (2003)), but it may also refer to any unauthorised absence (e.g. Hunt and Hopko (2009)). “School refusal” is often used to refer to young people who miss school due to emotional distress, and who do not attempt to conceal the absence from their parents. Truancy and school refusal are sometimes considered to be related to externalising and internalising disorders, respectively, although previous research indicates this is not always the case (Egger et al., 2003). Some researchers use broader terminology such as “problematic absenteeism” (Kearney 2003), although there are also difficulties with this approach. For example, there is little evidence to confirm at what threshold absence becomes “problematic”.

UK education policy utilises the terms authorised and unauthorised absence (Department for Education, 2019a). Authorised absence refers to: “Absence with permission from a teacher or other authorised representative of the schools. This includes instances of absence for which a satisfactory explanation has been provided, e.g. illness.” (Department for Education, 2019a, p7). Unauthorised absence refers to “Absence without permission from the school. This includes all unexplained or unjustified absences and arrivals after registration has closed.” (Department for Education, 2019a, p7). Two systematic reviews reported that most research in relation to emotional disorder and school absence has focused on unauthorised absence (Finning et al., 2019b; Finning et al., 2019c), despite over 70% of absences being authorised (Department for Education, 2019c).

These reviews also identified a lack of longitudinal evidence in relation to emotional disorder and school absence (Finning et al., 2019b; Finning et al., 2019c). Emotional disorders might directly impact attendance through symptoms such as reduced motivation, impaired concentration, fatigue and social withdrawal. Somatic symptoms such as headaches and stomach-aches are common in young people with emotional disorders and may also impact attendance (Campo, 2012). Anxiety may additionally lead to absence through avoidance of anxiety-provoking stimuli in the school environment such as social interaction, peer conflict or academic stress (Kearney, 2008b). However, it is also possible that young people who miss a lot of school have an increased vulnerability for emotional disorder due to their reduced access to educational and social opportunities. The direction of these relationships has important clinical and educational implications. For example, if emotional disorder precedes absence then an emphasis on identification and intervention at the first sign of distress may help not only to prevent emotional difficulties from escalating, but also interrupt a negative cascade of poor educational, social and health outcomes as a result of reduced school attendance. If absence precedes emotional disorder, it may suggest a need to provide preventative mental health support to young people who miss a lot of school, for example those with chronic physical conditions.

Wood et al. (2012) explored reciprocal relationships between absenteeism and symptoms of anxiety/depression in three datasets from the US. In one dataset absenteeism predicted depressive symptoms 6 months later and vice versa, but the other two datasets provided little evidence to support these relationships. The latter two datasets utilised a measure of internalising problems (i.e. symptoms of anxiety/depression combined), whereas the first measured only depressive symptoms, hence it is possible that longitudinal relationships exist only in relation to depression, and not anxiety. However, all three datasets used measures of symptoms rather than diagnostic assessments of anxiety or depressive disorders.

This study aims to build on previous research and investigate whether there are bi-directional longitudinal relationships between emotional disorder/difficulties and each of total, authorised and unauthorised school absence in the 2004

(baseline) British Child and Adolescent Mental Health Survey (BCAMHS) and its follow-up in 2007.

5.3 Methods

Both surveys had approval from Medical Research Ethics Committees (MRECs). Ethical approval for this secondary analysis was granted by the University of Exeter Medical School Ethics Committee. Full details of the methods and sampling frame for the BCAMHS is available elsewhere (Green et al., 2005; Parry-Langdon, 2008), but a summary is provided here.

5.3.1 Sample

The 2004 BCAMHS was a nationally representative survey of 7,977 children aged 5-16 living in private households in Great Britain, sampled via the Child Benefit register. In 2004 Child Benefit was a universal benefit available to all British parents on a per-child basis, and was estimated to cover 90% of all British children (Green et al., 2005). Sampling first involved the selection of postal sectors, and then the selection of children within each sector. The Child Benefit Centre provided the Office for National Statistics with a list of postal sectors with eligible children whose parents were in receipt of Child Benefit; the list was then stratified by region and socio-economic group. Sectors were selected with a probability proportional to the number of eligible children, followed by random selection of 29 children within each postal sector (Green et al., 2005).

Figure 22 provides an overview of the recruitment process. A target sample of 12,294 children was selected and, after removing addresses that opted out or were ineligible, 10,496 families were approached and 7,977 completed a baseline interview. In the 2007 follow-up survey, 5326 (73%) of the 7,329 parents contacted completed an interview. The BCAMHS used a multi-informant model, with parents and children aged 11 years and above completing a face-to-face interview and, where parents consented (N=6,326 at baseline), a postal questionnaire sent to the child's teacher.

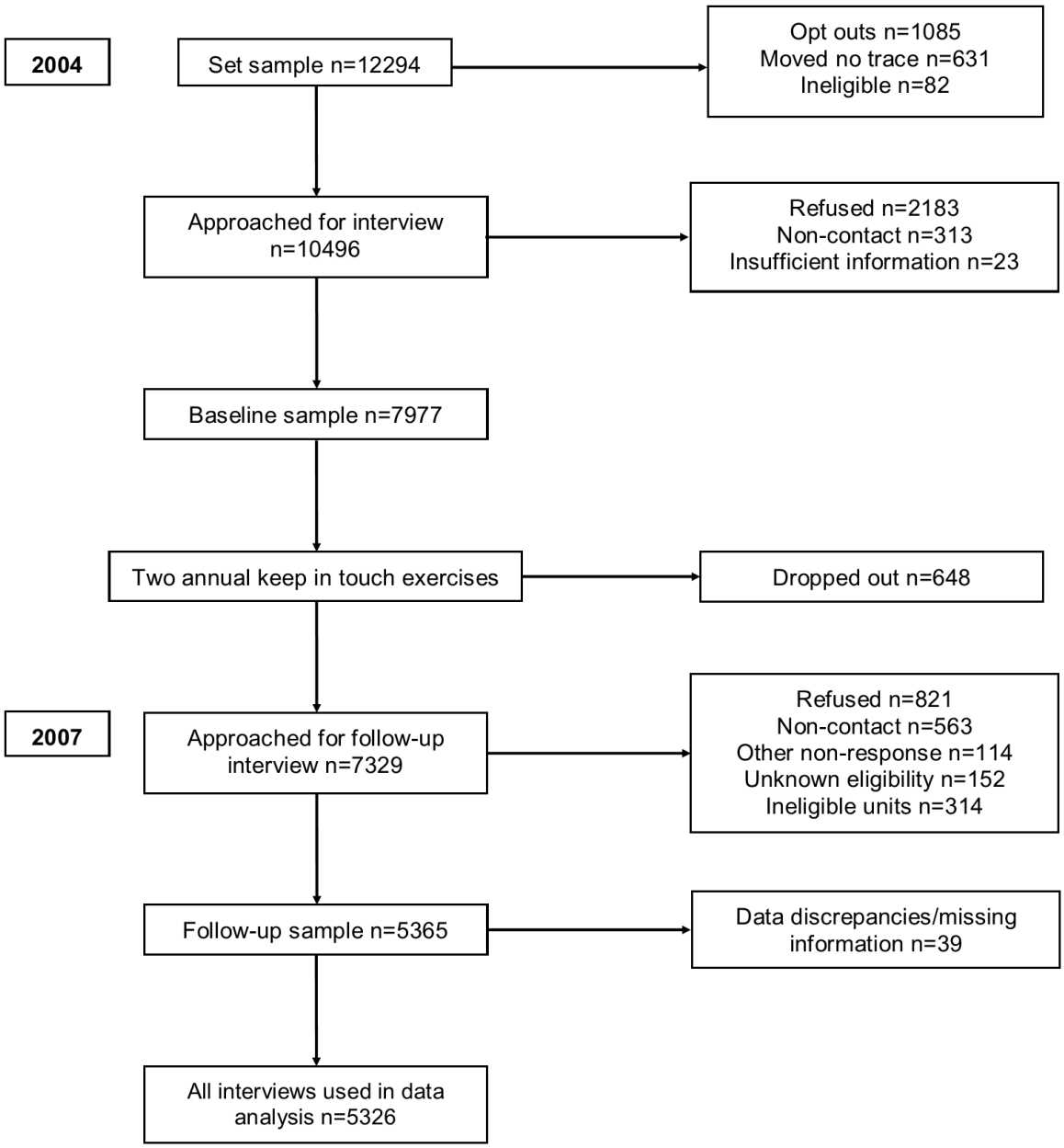

Figure 22. Flow diagram showing recruitment to the British Child and Adolescent Mental Health Survey in 2004 and its follow-up in 2007

5.3.2 Measures

Emotional disorder

Both surveys used the Development and Wellbeing Assessment (DAWBA) to assess psychiatric disorders according to the Diagnostic and Statistical Manual of Mental Disorders Fourth Edition (DSM-IV) (American Psychiatric Association, 1994). The DAWBA is a standardised diagnostic interview that combines structured and open-ended questions (Goodman et al., 2000; Green et al.,

2005). The DAWBA incorporated information from all parents, as well as children and teachers where available. A small group of experienced clinical raters reviewed computer-generated summaries and predictions of likely psychiatric diagnoses, which the raters could accept or overturn. Raters worked independently, with regular group discussion of difficult or borderline cases. The aim of the DAWBA is to replicate the process of clinical diagnosis as closely as possible. For the purposes of the present study, emotional disorders were separated into diagnosis of any anxiety and any depressive disorder, according to DSM-IV criteria.

Emotional difficulties

The Strengths and Difficulties Questionnaire (SDQ) is a validated questionnaire that screens for common childhood psychopathology (Goodman, 2001)). The questionnaire comprises 25 items across five subscales: emotional problems, conduct problems, hyperactivity, peer problems, and prosocial behaviour. In both surveys parents, teachers and children over 11 were invited to complete the SDQ. For the purposes of the present study, we used the emotional problems subscale as reported by parents and teachers. We did not include child-reported SDQ due to extensive missing data when combined with teacher-reported absence (see “Missing data” below). The emotional problems score ranges from zero to ten, with a higher score indicating greater difficulties.

School absence

Teacher questionnaires asked them to report, to the nearest half day: (1) “How many days was the child absent during the last whole term?” and (2) “Of these absences, how many were unauthorised absences?” For the purposes of the current study, we calculated authorised absences by subtracting the number of unauthorised from total absences. Of the 6,326 baseline teacher questionnaires completed, 4,132 answered at least one of the two absence questions. Absence for nine children was reported to be well in excess of the maximum number of days in a school term. A search of the UK Department for Education website suggested that schools rarely exceed 70 days of teaching in the spring term, when the majority of BCAMHS data were collected (Department for Education, 2015). We therefore set the maximum number of absences to 70, and observations greater than this (n=9) were recorded as missing. This resulted in

4,123 children (52% of the total baseline sample) with absence data used in the final analysis. In the follow-up survey, teacher questionnaires were completed for 3,090 children, and 1,978 (37% of the total follow-up sample) had available absence data.

Sociodemographic information

Demographic details such as the child's age, gender, ethnicity, mother's educational qualifications and family structure were collected from interviews with parents. Housing tenure was grouped into whether families rented or owned their own home. Parents reported the number of stressful life events the child had experienced, such as the death of a friend or family member or parental marital separation. Children were considered to have a severe, moderate, borderline or no learning difficulty if their parent or teacher estimated their mental age to be 40% or less, 41% to 60%, 61% to 80%, or more than 80% of their chronological age, respectively (Liddle et al., 2009). Parental mental health was assessed using the 12-item General Health Questionnaire, which is a validated screening device for identifying minor psychiatric disorders in the general population, with higher scores reflecting more severe difficulties (Goldberg, 1988). Parents were asked to rate the child's general health on a five-point scale from very bad to very good.

5.3.3 Analysis

Analysis was performed using Stata/SE 14.2 (StataCorp, 2015). The original survey derived sampling weights to adjust for the unequal probability of postal sector selection from the sampling frame, and to compensate for differential response rate by region. We followed the convention to not apply weights to estimates of association, because previous analyses of the initial BCAMHS showed very small effects of weighting on such estimates (Meltzer et al., 2000).

Regression analyses

Unadjusted regression models were initially fitted to investigate the impact of baseline emotional disorder/difficulties on absence at follow-up (using negative binomial regression), and the impact of baseline absence on emotional disorder (using logistic regression) and emotional difficulties (using linear regression) at follow-up. In the models where the outcome was absence, negative binomial

(rather than Poisson) regression and robust standard errors were used due to over-dispersion in the data (Hilbe, 2014).

After fitting unadjusted models, multivariable (adjusted) regression models were fitted to control for confounding. Potential confounders were identified from the background literature and were then tested in two separate multivariable models where the outcome was (1) absence, and (2) emotional disorder. Variables that were statistically significant predictors of absence and/or emotional disorder were included as confounders in all multivariable models. These were: child's age, gender and ethnicity; housing tenure; mother's highest educational qualification; learning difficulty; stressful life events; and family type (traditional versus single-parent, reconstituted or other). Parental mental health and child's general health were considered as potential confounders but were excluded from regression models as it was believed they might lie on the causal pathway between emotional disorder and absence, hence including them would introduce bias (Schisterman et al., 2009). Unadjusted and adjusted estimates are presented in the results section, but the adjusted estimates are considered primary.

Missing data

There was a substantial amount of missing data for absence at baseline (48% missing) and follow-up (63% missing). The proportion of missing data for each exposure, outcome and confounding variable is reported in Supplementary Material. In order to adjust for the bias and loss of statistical power inherent in analyses restricted to complete cases (Sterne et al., 2009), we used multiple imputation on the assumption that data were missing at random (MAR) (Rubin, 1976)). Fifty imputed datasets were created using the chained equations approach with Stata's *mi impute chained* command. Predictive mean matching, in which imputed values are sampled only from observed values, was used to impute absence and SDQ scores because these were not normally distributed (White et al., 2011).

Variables included in multiple imputation models included all exposures, outcomes and confounders, and the following additional (auxiliary) variables: family functioning measured using the McMaster Family Functioning Scale (Miller et al., 1985), mother's age when the child was born, teacher-reported

age level of the child, household income, whether the child felt picked on by a teacher, whether the child had any physical disorder, and if the parent had experienced a serious physical or mental illness since the child was born. Imputation of continuous, ordinal, multinomial and binary variables were based on linear, ordinal, multinomial and logistic regression models, respectively. Due to the extent of missing data, we performed a sensitivity analysis using complete cases only.

5.4 Results

5.4.1 Characteristics of the sample

Table 16 describes characteristics of the sample at baseline and follow-up. In 2004, 263 children (3.3% of the baseline sample) had an anxiety disorder and 68 (0.85%) had a depressive disorder. Of those with anxiety, 14% (N=38/263) also had depression, while of those with depression, 56% (N=38/68) also had anxiety. The mean number of total, authorised and unauthorised absences in 2004 were 4.1 (SD 6.5), 3.6 (5.6) and 0.6 (2.9), respectively. In 2007, 183 children (3.4% of the follow-up sample) had an anxiety disorder and 58 (1.1%) a depressive disorder. Twenty-five children had both, representing 14% of those with anxiety (N=25/183) and 43% (N=25/58) of those with depression. The mean number of total, authorised and unauthorised absences in 2007 were 3.7 (6.2), 3.2 (5.2) and 0.6 (3.0). Characteristics of children for whom absence data were missing versus non-missing are provided in Supplementary Material; all variables related to missingness were included in multiple imputation models as described in the methods section.

5.4.2 Regression models

All regression models were performed using: (a) multiply imputed data, and (b) complete case data. Results obtained here and in our previous work with this dataset (Finning et al., 2019a) demonstrate that both approaches result in similar effect estimates, but multiple imputation improves precision in these analyses (i.e. confidence intervals are narrower). Therefore, results presented here are from analysis of imputed data, and results from complete case analyses are available in Supplementary Material.

Table 16. Characteristics of children in the British Child and Adolescent Mental Health Surveys 2004 and 2007

2004		
CHARACTERISTIC	**N**	**Summary statistics**
Anxiety disorder: n (%)	7977	263 (3.3)
Depressive disorder: n (%)	7977	68 (0.85)
Parent-reported emotional difficulties: Mean (SD); Median (IQR)	7932	1.9 (2.0); 1 (0 to 3)
Teacher-reported emotional difficulties: Mean (SD); Median (IQR)	5998	1.5 (2.0); 1 (0 to 2)
School absence: Mean (SD); Median (IQR)		
Total	4132	4.1 (6.5); 2 (0 to 5)
Authorised	4013	3.6 (5.6); 2 (0 to 5)
Unauthorised	4021	0.6 (2.9); 0 (0 to 0)
Age in years: Mean (SD)	7977	10.54 (3.4)
Gender: n (%)		
Male	7977	4111 (51.5)
Female		3866 (48.5)
Ethnicity: n (%)		
White	7973	6920 (86.8)
Ethnic minority		1053 (13.2)
Housing tenure: n (%)		
Own home	7972	5667 (71.1)
Rented		2305 (28.9)
Mother's highest qualification: n (%)		
Degree or diploma	7765	2076 (26.7)
A-level or good GCSE		3216 (41.4)
Poor GCSE or other		1061 (13.7)
None		1412 (18.2)
Learning difficulty: n (%)		
No	7929	7213 (91.0)
Borderline, moderate or severe		716 (9.0)
Stressful life events: Mean (SD); Median (IQR)	7774	1.0 (1.2); 1 (0 to 2)
Family structure: n (%)		
Traditional	7977	5112 (64.1)
Single-parent, reconstituted, or other		2865 (35.9)
Child's general health: n (%)		
Very good or good	7865	7401 (94.1)
Fair, bad or very bad		464 (5.9)
Parental mental health*: Mean (SD); Median (IQR)	7736	1.6 (2.7); 0 (0 to 2)

Table 16 continued on next page

2007		
CHARACTERISTIC	**N**	**Summary statistics**
Any anxiety disorder: N (%)	5326	183 (3.44)
Any depressive disorder: N (%)	5326	58 (1.09)
Parent-reported emotional difficulties: Mean (SD); Median (IQR)	5283	1.8 (2.0); 1 (0 to 3)
Teacher-reported emotional difficulties: Mean (SD); Median (IQR)	3129	1.3 (1.8); 0 (0 to 2)
School absence: Mean (SD); Median (IQR)		
Total	1978	3.7 (6.2); 2 (0 to 4)
Authorised	1842	3.2 (5.2); 2 (0 to 4)
Unauthorised	1842	0.6 (3.0); 0 (0 to 0)

*****Parental mental health measured with the General Health Questionnaire (GHQ), where greater scores indicate more symptoms.

Baseline emotional disorder/difficulties as predictors of school absence at follow-up

In unadjusted analyses, all four measures of emotional disorder/difficulties were associated with an increased rate of all types of absence (see Table 17). However, after adjusting for confounders only some relationships remained statistically significant. Baseline depression was associated with an increased rate of total (adjusted incident rate ratio (IRR) 2.42, 95% CI 1.28 to 4.58, p=0.007) and unauthorised (adjusted IRR 6.72, 95% CI 2.84 to 15.9, p<0.001) absence at follow-up. Baseline teacher-reported emotional difficulties were associated with an increased rate of unauthorised absence at follow-up (adjusted IRR 1.09, 95% CI 1.02 to 1.16, p=0.01, which suggests that the rate of unauthorised absence increased by 9% for each one point increase on the SDQ emotional problems subscale, where scores can range from 0 to 10). A similar trend was observed for teacher-reported emotional difficulties in relation to total absence, for which there was weak evidence of an association (adjusted IRR 1.03, 95% CI 1.00 to 1.06, p=0.06).

Table 17. The impact of baseline (2004) emotional disorder/difficulties on school absence at follow-up (2007)

	TOTAL ABSENCE (2007)		AUTHORISED ABSENCE (2007)		UNAUTHORISED ABSENCE (2007)	
	Rate ratio & 95% CI	**p-value**	**Rate ratio & 95% CI**	**p-value**	**Rate ratio & 95% CI**	**p-value**
Anxiety disorder						
Unadjusted	1.60 (1.19 to 2.14)	0.002	1.46 (1.07 to 1.991)	0.02	2.44 (1.32 to 4.50)	0.005
Adjusted	1.23 (0.92 to 1.66)	0.16	1.16 (0.85 to 1.57)	0.35	1.70 (0.87 to 3.34)	0.12
Depressive disorder						
Unadjusted	3.20 (1.76 to 5.82)	<0.001	2.21 (1.12 to 4.35)	0.02	9.72 (4.56 to 20.69)	<0.001
Adjusted	2.42 (1.28 to 4.58)	0.007	1.71 (0.83 to 3.53)	0.14	6.72 (2.84 to 15.93)	<0.001
Parent-reported emotional difficulties						
Unadjusted	1.05 (1.02 to 1.08)	0.002	1.04 (1.01 to 1.07)	0.005	1.07 (1.01 to 1.14)	0.03
Adjusted	1.02 (0.99 to 1.05)	0.24	1.02 (0.99 to 1.04)	0.27	1.02 (0.96 to 1.09)	0.50
Teacher-reported emotional difficulties						
Unadjusted	1.06 (1.02 to 1.09)	0.001	1.04 (1.01 to 1.07)	0.01	1.13 (1.06 to 1.20)	<0.001
Adjusted	1.03 (1.0 to 1.06)	0.06	1.02 (0.99 to 1.05)	0.23	1.09 (1.02 to 1.16)	0.01

CI – confidence interval. Rate ratios for anxiety and depressive disorders refer to the increase in the rate of absence at follow-up for children with the disorder at baseline compared to those with no disorder at baseline. Rate ratios for emotional difficulties scores refer to the increase in the rate of absence at follow-up for each one-point increase on the emotional problems subscale (where scores can range from 0 to 10) at baseline. Multivariable models adjusted for child's age, gender and ethnicity; housing tenure; mother's highest educational qualification; learning difficulty; stressful life events; and family type (traditional versus single-parent, reconstituted or other).

Baseline school absence as a predictor of emotional disorder/difficulties at follow-up

In unadjusted analyses, total and authorised absence were associated with all four measures of emotional disorder/difficulties, and unauthorised absence was associated with higher parent- and teacher-reported emotional difficulties (see Table 18). After adjusting for confounders, four relationships remained statistically significant. Total and authorised absence were associated with greater parent-reported emotional difficulties (point estimates indicate that for each five-day increase in total and authorised absence at baseline, parent-reported emotional difficulties scores increased by 0.08 points). Total and authorised absence were also associated with greater teacher-reported emotional difficulties (point estimates indicate that for each five-day increase in total and authorised absence, teacher-reported emotional difficulties increased by 0.11 and 0.12 points, respectively). Similar trends were observed for total and authorised absence in relation to anxiety and depressive disorders, but these relationships were not statistically significant after adjusting for confounders (see Table 18).

Table 18 presented on next page

Table 18. The impact of baseline (2004) school absence on emotional disorder/difficulties at follow-up (2007)

	2007 ANXIETY DISORDER		2007 DEPRESSIVE DISORDER		2007 PARENT-REPORTED EMOTIONAL DIFFICULTIES		2007 TEACHER-REPORTED EMOTIONAL DIFFICULTIES	
	Odds ratio & 95% CI	**p-value**	**Odds ratio & 95% CI**	**p-value**	**Regression coefficient & 95% CI**	**p-value**	**Regression coefficient & 95% CI**	**p-value**
Total absence								
Unadjusted	1.15 (1.04 to 1.27)	0.009	1.21 (1.04 to 1.40)	0.01	0.15 (0.09 to 0.22)	<0.001	0.17 (0.10 to 0.24)	<0.001
Adjusted	1.05 (0.93 to 1.19)	0.44	1.05 (0.93 to 1.19)	0.38	0.08 (0.02 to 0.15)	0.009	0.11 (0.04 to 0.18)	0.002
Authorised absence								
Unadjusted	1.18 (1.04 to 1.33)	0.01	1.26 (1.05 to 1.50)	0.01	0.16 (0.09 to 0.23)	<0.001	0.18 (0.10 to 0.26)	<0.001
Adjusted	1.07 (0.93 to 1.24)	0.35	1.13 (0.91 to 1.41)	0.28	0.08 (0.02 to 0.15)	0.02	0.12 (0.04 to 0.21)	0.003
Unauthorised absence								
Unadjusted	1.11 (0.87 to 1.40)	0.41	1.12 (0.76 to 1.65)	0.58	0.20 (0.06 to 0.34)	0.006	0.19 (-0.02 to 0.40)	0.07
Adjusted	0.98 (0.74 to 1.30)	0.88	0.94 (0.56 to 1.58)	0.81	0.12 (-0.02 to 0.26)	0.09	0.12 (-0.09 to 0.34)	0.25

CI – confidence interval. Odds ratios refer to the change in odds of anxiety/depression at follow-up *for each five-day increase* in absence at baseline. Regression coefficients refer to the increase in emotional difficulties scores (where scores can range from 0-10) at follow-up *for each five-day increase* in absence at baseline. Multivariable models adjusted for child's age, gender and ethnicity; housing tenure; mother's highest educational qualification; learning difficulty; stressful life events; and family type (traditional versus single-parent, reconstituted or other).

5.5 Discussion

This study investigated bi-directional longitudinal relationships between emotional disorder/difficulties and absence from school. Baseline depressive disorder and teacher-reported emotional difficulties were associated with an increased rate of unauthorised absence at three-year follow-up, and baseline depressive disorder was also associated with an increased rate of total absence at follow-up. Baseline total and authorised absence were associated with higher parent- and teacher-reported emotional difficulties at follow-up.

Although we observed similar trends for all four measures of emotional disorder/difficulties in relation to absence at follow-up, only depression and teacher-reported emotional difficulties were statistically significant predictors. Previous cross-sectional research has identified particularly strong relationships between depression and absence in general, as well as unauthorised absence specifically (Finning et al., 2019a; Hunt and Hopko, 2009; Ingul et al., 2012; Wood et al., 2012). Findings presented here show that depression is not only associated with, but *precedes* absence, and suggest a potential causal role of depression in absence.

It is unclear why depression would be more predictive of absence than anxiety. Symptoms of depression such as impaired concentration, lack of motivation, insomnia and fatigue may be more detrimental to school attendance than symptoms of anxiety. Depression is associated with pervasive and consistent difficulties over two weeks or more, while anxiety may be more transient and includes some disorders that might not impact school (e.g. simple phobia or panic disorder). It is worth noting, however, that in the survey used here, 14% (N=38/263) of those with anxiety also had depression, while 56% (N=38/68) of those with depression also had anxiety. Thus individuals with depression may represent a more comorbid and severely impaired group, which may account for the particularly strong relationship between depression and subsequent absence. However, the current study was not designed to directly compare young people with and without psychiatric comorbidity, and future research should explore the effect of comorbidity on school absence.

Findings suggest that emotional disorders are more predictive of unauthorised than authorised absence. It is possible that symptoms of emotional disorder are not recognised as signs of ill health and are considered by schools to be an unreasonable reason for absence. Parker et al. (2018) found that parents and teachers were less likely to report concern about the mental health of children with emotional disorders compared to those with conduct or neurodevelopmental disorders. If adults do not perceive young people with emotional disorders to be "unwell" then it is unlikely that any associated school absence will be authorised.

Given that school absence is associated with a range of negative outcomes in social, economic and health domains (Kearney, 2008b), these findings highlight that early identification and intervention for emotional disorder serves not only to reduce the immediate distress caused to the young person and their family, but could interrupt a negative developmental trajectory that has the potential to impair the young person's entire life course. In light of recent proposals by the UK government to create a system of greater integration between mental health and education (Department of Health & Department for Education, 2017), our findings suggest that attendance data could be a helpful component of school-based screening for emotional disorders.

In terms of absence predicting subsequent emotional disorder/difficulties, total and authorised absence in 2004 were associated with higher parent and teacher-reported emotional difficulties in 2007. Although only the relationships with emotional difficulties were statistically significant, similar trends were observed for total and authorised absence in relation to emotional disorders at follow-up. The odds of anxiety and depression were estimated to increase by 7% and 13%, respectively, for each five-day increase in authorised absence at baseline. It is possible that, due to the small numbers of children with anxiety and depression, these analyses lacked statistical power. However the narrow confidence intervals suggest that this is not the case. Given that effect sizes for emotional difficulties were small, despite being highly statistically significant, it may be that authorised absence predicts small increases in emotional difficulties, which may not always reach diagnostic thresholds for anxiety or depression.

Young people who miss a lot of school risk missing out on many of the social and educational opportunities available to their peers, which may increase their vulnerability to emotional ill health. Factors such as chronic physical illness, parental separation, neglect or abuse, and parental substance abuse are all associated with higher rates of absence (Bellis et al., 2018; Lum et al., 2017). These factors may independently increase a young person's risk of both emotional disorder and absence, but absence may also be one of the pathways by which they negatively impact emotional health. In other words, factors such as these may lead to increased school absence, which may itself be detrimental to emotional health. Future research that explores longitudinal pathways between these variables would help to identify potential causal mechanisms and targets for intervention.

5.5.1 Strengths and limitations

This study benefitted from a large nationally representative sample with follow-up data. Both waves of data collection utilised standardised diagnostic measures as well as a validated measure of symptoms, allowing the full spectrum of emotional difficulties to be considered. We reported different types of absence, including authorised absence, which has previously been a neglected focus of research. The BCAMHS benefits from multi-informant data collection, however we were unable to use child-reported emotional difficulties due to the extent of missing data in this survey. A previous study reported the relationship between school reluctance (defined as wanting to avoid school but still attending) and anxiety to be more pronounced when using child- compared to parent-reports of child mental health (Jones and Suveg, 2015), thus it is possible that the associations measured here would have been even greater if we had been able to use child-reports.

Teacher-reported absence may be subject to less reporting bias than parent- or child-reports, although a school's decision to authorise an absence or not is likely to be influenced by a variety of social and cultural factors, which may vary between schools. It is unknown to what extent teachers referred to administrative records or relied on their recall of pupil absence; the latter is also likely to be subject to bias. Because teachers were not asked to report the maximum number of available days in the school term, we selected a maximum

number (N=70) based on searches of the UK Department for Education database (Department for Education, 2015). This will inevitably have been an approximation to the true number of days for some schools. Future research that utilises attendance data from the centrally-held National Pupil Database would help to minimise these biases, and would enable more detailed exploration of absence coding including different reasons such as illness, holiday, lateness etc.

There was a substantial amount of missing absence data in our analyses (48% missing in 2004 and 63% missing in 2007). We used multiple imputation, which, even when the proportion of missing data is high, minimises the bias and loss of statistical power inherent in analyses restricted to complete cases (Sterne et al., 2009; White et al., 2011). However, it is impossible to distinguish between data missing at random (MAR) and missing not at random (MNAR) using only observed data. Therefore it is possible that missingness was related to other variables not measured and not taken into account in the imputation models. However, we consider this unlikely as our sensitivity analyses using complete cases demonstrated that multiple imputation resulted in similar effect estimates but greater precision.

We did not adjust for children's general health in our multivariable models because we believed it might lie on the causal pathway between absence and emotional disorder/difficulties, and thus including it would have resulted in biased effect estimates (Schisterman et al., 2009). However there is currently little evidence that we are aware of to support or disprove this assumption. It may be that general health plays a confounding, rather than a causal role. Future research that explores causal pathways between general health, emotional disorder and absence, for example using developmental cascade models with multiple data points, would help to further our understanding of how these factors inter-relate.

5.5.2 Conclusions

We found evidence for a bi-directional relationship between emotional disorder/difficulties and school absence, but these were inconsistent between different types of emotional difficulties and absence. Depression is more

predictive of absence, particularly unauthorised, than anxiety. These findings add to the growing literature regarding the important interplay between mental health and education, and emphasise the importance of timely intervention for young people who are experiencing difficulties in either of these domains. Attendance data may serve as a helpful component of school-based approaches for mental health screening.

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Conflict of interest

None.

Chapter Six: Secondary school practitioners' beliefs about risk factors for school attendance problems: A qualitative study (Study Four)

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This chapter is the accepted version of the published manuscript. The Supplementary Material from this published manuscript can be found in Appendix Seven.

6.1 Abstract

School staff have an important role to play in identifying and assisting pupils who require additional support to regularly attend school, but their beliefs about risk factors might influence their decisions regarding intervention. This qualitative study investigated educational practitioners' beliefs about risk factors for attendance problems. Sixteen practitioners from three secondary schools were interviewed via focus groups. Data were analysed using thematic analysis. Practitioners identified risk factors related to the individual, their family, peers and school. Poor mental health was identified as a risk factor, but practitioners primarily focused on anxiety rather than other mental health problems like depression or behavioural disorders. The overall perception was that school factors were less important than individual, family and peer factors. Implications include a need for increased awareness of the role of school factors in attendance problems, focus on promoting positive peer and pupil-teacher relationships, and collaborative working between young people, families and schools.

Keywords

School attendance, school absence, teachers, school mental health, qualitative.

6.2 Introduction

School plays a crucial role in young people's academic, emotional and social development, and frequent absence from school is associated with a range of adverse consequences both in the short- and long-term, including poor academic outcomes (Credé et al., 2010), economic deprivation (Kearney, 2008b), and adult unemployment (Attwood and Croll, 2014). In the 2017/18 academic year, 8.7% of primary and 13.9% of secondary school pupils met criteria for persistent absence, defined by the Department for Education as missing 10% or more of available school sessions (Department for Education, 2019c). Furthermore, rates of authorised, unauthorised and persistent absence have increased in the last year, and unauthorised absences are now the highest since records began (Department for Education, 2019c).

Previous researchers have commonly divided risk factors for attendance problems into those related to the individual, their family, school, and peers (Gren-Landell et al., 2015; Ingul et al., 2019; Ingul et al., 2012), in line with Bronfenbrenner's ecological theory, which recognises the important role of factors in all of these domains in child development (Bronfenbrenner and Morris, 2006). In terms of factors related to the individual, research has demonstrated that poor physical health (Ingul et al., 2012), mental health problems (Egger et al., 2003), special educational needs (Havik et al., 2015a) and drug or alcohol use (Gase et al., 2014) are risk factors for poor attendance. Factors related to the family include neglectful parenting (Gase et al., 2014), lack of parental involvement in school activities (Hendron and Kearney, 2016), unemployment (Ingul et al., 2012), family conflict (McShane et al., 2001) and family history of attendance problems (Dalziel and Henthorne, 2005). School factors include poor school climate (including connectedness and perceptions of school safety (Van Eck et al., 2017)), poor pupil-teacher relationships (Egger et al., 2003; Malcolm, 2003) and school transition periods (Malcolm, 2003). Finally, factors related to peers include social isolation (Havik et al., 2015b), a lack of peer support (Hendron and Kearney, 2016), peer conflict (McShane et al., 2001), bullying (Ingul et al., 2012) and pressure from peers to skip school (Malcolm, 2003).

Despite the common categorisation of risk factors into these four broad domains, in reality, complex interplays exist within and between these categories, as reflected by “mesosystems” in Bronfenbrenner’s ecological theory (Bronfenbrenner and Morris, 2006). For example, poor pupil-teacher relationships and bullying can both negatively impact mental health (Barchia and Bussey, 2010; Lang et al., 2013), and parents with a history of attendance problems may be less inclined to involve themselves in their child’s school activities. In addition, some risk factors could be argued to fall under multiple domains. For example, a lack of parental involvement in school activities is often considered a family factor, but may also be influenced by the young person (individual factors) and/or the school environment (school factors). Whilst grouping risk factors into broad domains may be helpful for conceptualisation of the problem, in practice it is likely that attendance problems result from complex interactions between risk factors, and the best approaches are likely to involve interdisciplinary collaboration between professionals in the fields of education and healthcare, as well as between these professionals and families (Gren-Landell et al., 2015; Heyne, 2019; Kearney, 2008a).

A further complicating factor in school attendance research is the continued debate regarding terminology. A full discussion is outside the scope of this paper, but a brief description is provided and interested readers are directed towards more in-depth discussions provided elsewhere (e.g. (Elliott and Place, 2017; Heyne et al., 2019b; Kearney, 2008a). School attendance has historically been divided into two subtypes: (a) school refusal, referring to pupils who miss school due to anxiety or emotional distress, with the knowledge of their parents; and (b) truancy, referring to pupils who miss school due to a lack of interest in school or defiance of authority, and who attempt to conceal the absence from their parents. School refusal is typically considered to be related to internalising problems such as depression or anxiety, while truancy is considered to be related to externalising problems. However, a study by Egger et al. (2003) demonstrated that school refusal and truancy are not mutually exclusive, and other studies, including two linked systematic reviews, have shown that truancy is strongly associated with internalising problems (Finning et al., 2019b; Finning et al., 2019c; Gase et al., 2014; Mandalia et al., 2018). It could therefore be

argued that grouping attendance problems into subtypes such as school refusal and truancy lacks empirical support, and may result in adults around the young person making inaccurate assumptions about the underlying aetiology of the problem. Indeed, truancy is viewed less sympathetically by school staff than school refusal and is more likely to be approached punitively rather than therapeutically (Torrens Armstrong et al., 2011).

School staff are likely to be among the first to recognise poor or changing patterns of attendance and play a central role in identifying pupils who are struggling to attend. It is important, therefore, to understand the beliefs of school staff regarding risk factors for attendance problems. In a survey of Swedish teachers, family factors and child low mood/depression were believed to be the two leading causes of attendance problems in young people aged 12 to 15 years (Gren-Landell et al., 2015). In a quantitative survey in the UK, Malcolm (2003) found that primary and secondary school teachers believed home factors such as inadequate parenting, a disorganised lifestyle, and low value placed on education, to be causes of truancy. Secondary school teachers additionally discussed the influence of non-familial factors such as bullying, pressure from peers to miss school, a curriculum not suited to the pupil's needs (e.g. over-academic or "boring"), and school change or transition.

The majority of previous research has investigated teachers' views while overlooking the experiences of other school staff who play an important role in identifying and responding to attendance problems, including those with greater pastoral roles. A qualitative study by Cunningham (2017) explored the experiences of primary school practitioners in a variety of teaching and non-teaching roles. Practitioners in this study discussed a range of factors they believed increased pupils' risk of attendance problems, including anxiety, low academic confidence, peer difficulties, low family aspirations, parental anxiety and overprotection, family deprivation, and a chaotic home life. However, factors related to the school were rarely discussed, supporting findings from previous research that teachers perceive home-life as the primary cause of attendance problems, despite pupils and parents emphasising school factors (Dannow et al., 2018; Gregory and Purcell, 2014; Gren-Landell et al., 2015; Havik et al., 2014; Malcolm, 2003).

To the best of our knowledge there have been no qualitative studies to explore secondary school educational practitioners' beliefs about risk factors for attendance problems. Given that rates of overall and persistent absence are higher in secondary, compared to primary, school (Department for Education, 2019c), it is important to understand attendance problems from the perspective of those who have experience working with this age-group. This study aims to investigate secondary school educational practitioners' beliefs about risk factors for school attendance problems.

6.3 Methods

Data were collected via focus groups, which are useful in generating a rich understanding of experiences and encouraging participants to make collective sense of phenomena. We used focus groups rather than individual interviews as the former more readily highlights similarities and differences between individual views, allows group members to challenge each other's opinions, and may generate a wider range of views and ideas than could be captured through individual interviews (Barbour, 2007; Kidd and Parshall, 2000; Morgan, 1998).

6.3.1 Sample

Opportunity sampling was used to recruit 16 secondary school educational practitioners from three schools in the South West of the UK, with one focus group conducted at each of the three schools. Table 19 provides further details of the three schools. Practitioners could be working in any teaching or non-teaching role, but were required to have experience of working with pupils with attendance problems. Table 20 provides further details of the 16 practitioners who participated.

Table 19. Characteristics of participating schools

Focus group	School type	Ofsted inspection rating	Total number of pupils	Pupils eligible for Free School Meals (%)	Rate of overall absence (%)	Rate of persistent absence[a] (%)
1	Mainstream city-centre faith academy[b]	3 - Requires improvement	1646	9.4	7.1	21.9
2	Mainstream rural academy	2 - Good	1518	4.5	5.1	11.8
3	Mainstream city-centre academy	2 - Good	908	11.5	6.9	20.4

Source: Department for Education school comparison tool via www.compare-school-performance.service.gov.uk. Data refers to the 2016/17 school year. [a] Persistent absence refers to the percentage of pupils who miss 10% or more of school sessions in a year; National average is 13.5%. [b] Academies are independent, state-funded schools that receive funding directly from central government, and are independent of local authority control.

Table 20. Participant characteristics

Participant	Focus group	Gender	Age	Job role
P1	1	Male	40-49	Head of Key Stage Four*
P2	1	Male	30-39	SENCO
P3	1	Male	40-49	Assistant Head of Sixth Form
P4	1	Female	30-39	Head of Year
P5	1	Male	30-39	Head of Year & P.E. teacher
P6	1	Female	40-49	Head of Year 9
P7	2	Female	40-49	SENCO
P8	2	Male	50-59	Assistant Principal
P9	2	Female	30-39	Parent & Family Support Advisor
P10	2	Female	20-29	Pupil Support Worker
P11	2	Female	60+	Inclusion Manager
P12	2	Female	40-49	Pupil Support Worker
P13	3	Female	50-59	Family Liaison Worker
P14	3	Female	40-49	Personalised Learning Assistant
P15	3	Female	40-49	Personalised Learning Assistant
P16	3	Female	30-39	Deputy Safeguarding Lead

*Key Stage Four refers to school Years 10 and 11, when pupils are aged between 14 and 16 years. P.E. = Physical Education; SENCO = Special Educational Needs Coordinator.

6.3.2 Data collection

Focus groups were conducted as part of a broader project that aimed to explore practitioners' experiences of working with pupils with attendance problems, and the interventions available. A semi-structured topic guide was used to encourage consistency in the topics covered, while also allowing flexibility for practitioners to discuss topics pertinent to their own experience. The topic guide included questions regarding practitioners' experience of working with pupils with attendance problems, the current support available, and further support they believed would be beneficial. The term "attendance problems" is used throughout this paper to reflect the broad nature of focus group discussions. Findings from our initial analysis exploring general experiences and interventions for attendance problems have been published previously (Finning et al., 2017a). However, during the original analysis, we noticed that data had been collected from focus groups that focused on practitioners' beliefs about risk factors for attendance problems. This topic was not intended according to our original research aims, nor in the topic guide, but was clearly viewed as important to participants. This additional topic is therefore the focus of the research question and analysis presented in this paper. Secondary analysis of qualitative data in this way is not uncommon and enables deeper understanding of particular issues arising in the data (Wasterfors et al., 2014). Ethical approval was provided by the University of Reading Research Ethics Committee.

6.3.3 Procedure

Eighteen schools were initially approached, via an email from BD, which was followed up with a phone-call. Three schools agreed to participate. Practitioners from these schools were recruited to the study via word-of-mouth from a lead point of contact at the school. Focus groups were conducted within school grounds, during or at the end of the school day, by BD who had prior experience as a teacher and was undertaking an MSc in Psychology. Each focus group was additionally attended by a moderator, who assisted BD and took notes. Practitioners had no relationship with either researcher prior to their participation in the study. Written consent was provided by all practitioners. Focus groups lasted between 39 and 54 minutes, and were audio-recorded, transcribed and double-checked for accuracy by KF.

6.3.4 Analysis

Thematic analysis, as described by Braun and Clarke (2006), was used to analyse data, with the assistance of QSR International's NVivo 11 software. Thematic analysis is a flexible technique that aims to identify, analyse and organise patterns within the data. "Codes" are labels that are applied to the data according to their meaning, and these are then organised into higher-level "themes" (Braun and Clarke, 2006). Transcripts were initially read and re-read by KF by way of familiarisation with the data, and then codes were applied to the transcripts line-by-line. We used a combination of deductive coding, based on our knowledge of previous literature, and inductive coding of topics that were identified during analysis. The coded data were grouped into themes and subthemes based on their semantic similarity. Coded data were then reviewed to ensure that themes and subthemes were coherent and distinct. Finally, transcripts were re-read to relate the themes back to the original data, and to provide an opportunity for any final coding to take place. Although this process is described linearly, it was in fact an iterative and cyclical process, which continued until a final map of themes was produced. Throughout analysis, meetings were held between KF, PW and KH, in order to discuss emerging codes and themes. Data within each theme were summarised in order to produce a narrative, which is presented in this paper.

6.4 Results

Analysis identified four major themes, related to individual, family, peer, and school factors. Figure 23 shows the four themes and the factors identified within each theme.

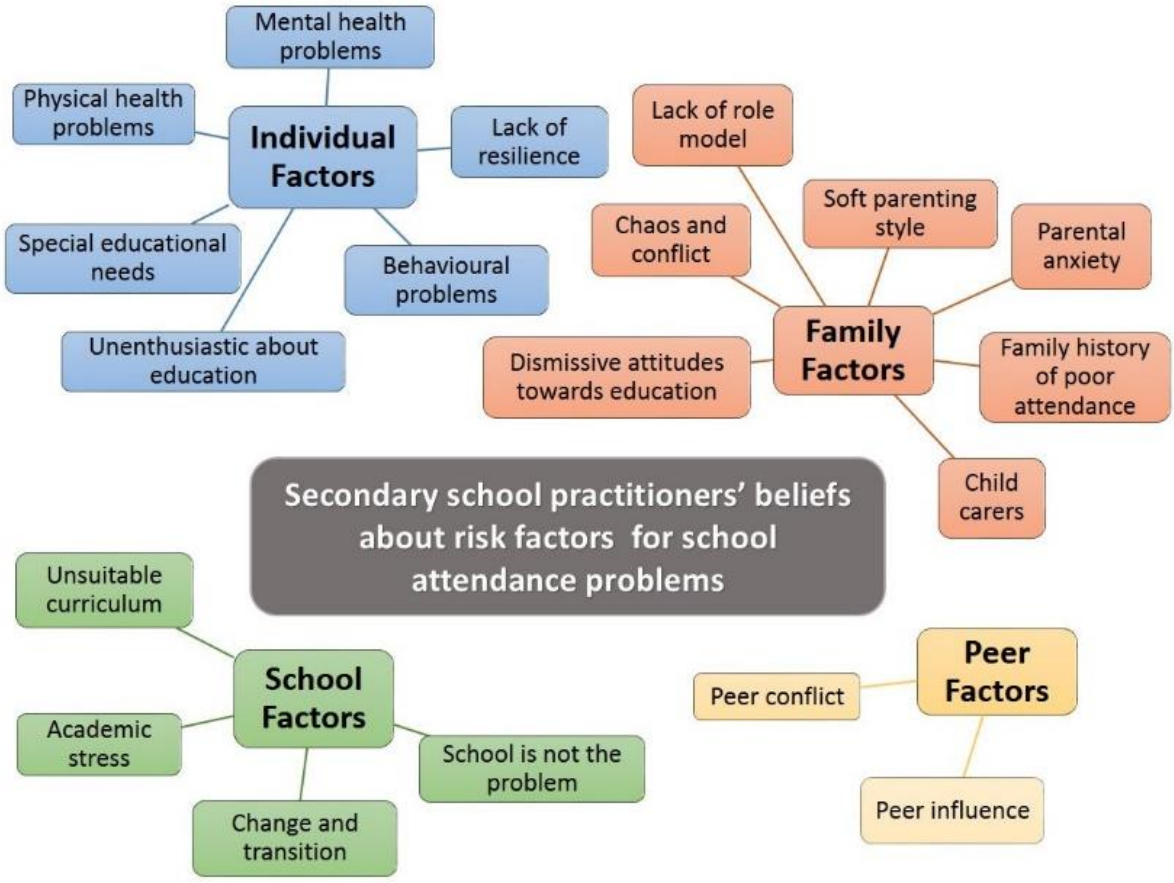

Figure 23. Analytic themes and factors identified within each theme

6.4.1 Individual factors

Practitioners in all three groups expressed a belief that mental health problems, particularly anxiety, are a factor in the majority of cases of attendance problems, and that although missing school reduces anxiety in the short-term, it ultimately causes pupils' anxiety to build, thus creating a vicious cycle.

> *I do think that the majority that we've worked with have all been something to do with mental health issues, and it starts with a simple panic attack at school and then it escalates until it's full-blown school anxiety. And once they're there, it's very difficult to get them back in again. (P6, Head of Year Nine, Group One)*

Mental health problems were considered a particular risk factor for secondary school pupils rather than younger children, and were highlighted as an issue that may be increasing. Anxiety was seen to fluctuate, which could make it difficult to identify:

> *The anxiety might manifest itself with a particular subject or particular teacher or particular friendship group, but that wouldn't be there in another lesson or at lunch-time… so that's really hard to see that change. (P8, Assistant Principal, Group Two)*

All three groups identified a lack of resilience as a key risk factor for attendance problems. Practitioners described pupils with difficult life circumstances who maintained regular attendance, which was believed to be a result of resilience. Pupils with a lack of resilience were described as being sensitive to seemingly small triggers such as minor peer conflict.

> *The kids that are strong, they've had a bit of conflict and come back the next day. (P9, Parent and Family Support Advisor, Group Two)*

Groups One and Two described a perceived dichotomy between mental health and bad behaviour, and discussed pupils they believed had poor attendance because they were '*rebelling' (P6, Head of Year Nine, Group Two)* or being a '*naughty kid' (P1, Head of Key Stage Four, Group One).* Although such behaviours may be a sign of mental or neurodevelopmental disorders, practitioners appeared not to label these behaviours as mental health problems, and implied the use of tougher, more punitive approaches towards these pupils compared to those believed to have internalising problems such as anxiety.

> *You think well I'm just rewarding bad behaviour and if you do that you're just opening the flood gates, and that's always the fine line that you're always walking, with so many kids. (P1, Head of Key Stage Four, Group One)*

A lack of enthusiasm towards school and low academic aspirations were considered risk factors, and practitioners discussed pupils who they believed simply *'can't be bothered' (P4, Head of Year, Group One)* to attend school, or prefer to do other things such as hang out with friends or go to the park.

> *We used to have a girl like that who used to get on the bus and go to [name of park] for the day (laughs). (P14, Personalised Learning Assistant, Group One)*

> *Used to have a lovely day. (P15, Personalised Learning Assistant, Group One)*

Groups One and Two identified special educational needs as a risk factor for poor attendance, believing that mainstream school is not suitable for everyone and that for pupils who are struggling to attend school, alternative schooling should be considered.

> *Mainstream school's not for everyone, we're going to have that small group of kids that no matter how hard you try, school is just not the right place for them, they need something different.(P6, Head of Year Nine, Group One)*

Only Group One acknowledged the role of physical health problems, although they did not discuss this at any great length and one practitioner was unconvinced of the validity of some pupils' medical absences:

> *You get these medical reasons but then you sort of think yeah, but I think if push had come to shove, that pupil could have been in more. (P1, Head of Key Stage Four, Group One).*

6.4.2 Family factors

Family life was emphasised as playing a key role in attendance problems. Practitioners described parents with dismissive attitudes towards education and low aspirations for the family, often as a result of their own upbringing or cultural norms, and some parents were perceived to support non-attendance and be obstructive towards the school's attempts to engage the pupil.

> *Your biggest problem with school refusers is home sadly, and I hate to put it back onto the parents… but the majority of cases, the parents aren't backing us, they might say that they are while on the phone but they're not backing us up. (P1, Head of Key Stage Four, Group One)*

Group One highlighted the negative impact of chaos or conflict within the family home:

> *She's been better the past few weeks, there was today but that seemed to be a real conflict at home that's kinda, hard to resolve. (P3, Assistant Head of Sixth Form, Group One)*

> *Her and mum just don't get on. (P6, Head of Year Nine, Group One)*

On the other hand, practitioners described the positive impact of parents who consistently encourage their child to attend school even when they are struggling:

> *They'd come to me in the morning even if they were upset, so they knew that their parent would still bring them in and they wouldn't, whereas if you had a parent that was like 'oh well they're not coping, they can't do it'… (P10, Pupil Support Worker, Group Two)*

> *Yes then that could have developed into a different story. (P9, Parent & Family Support Advisor, Group Two)*

Practitioners discussed the detrimental effect of a lack of positive role model at home, such as parents who are *'still in their pyjamas or not even up….then the child's got no motivation to get themselves out of bed to get an education' (P15, Personalised Learning Assistant, Group Three).* Also perceived to be detrimental to attendance was a "soft" parenting style such as not following through with consequences, a lack of boundaries, or prioritising avoidance of conflict over attendance. Parental anxiety was also considered a risk factor, making it difficult to engage parents and creating a barrier for their child to attend. As P11 explained: '*The anxious parents that you know, their kid wants to come to school but the parent's too anxious and that's really difficult.' (P11, Inclusion Manager, Group Two)*

Attendance problems were considered to sometimes be a transgenerational issue; a *'trait' (P4, Head of Year, Group One)* that runs through families, often having previously occurred with siblings, parents or grandparents. Practitioners implied that parental school anxiety and/or attitudes towards education were important factors in this respect:

> *And it runs in families as well doesn't it sometimes? (P11, Inclusion Manager, Group Two)*

> *I was just going to say that, I don't know whether your research will look at sort of generational impact as well, you know the, the ethos or the mind-set of that family unit, you know, were parents, were grandparents attenders at school, were they successful at school, um, that has a huge bearing doesn't it? (P8, Assistant Principal, Group Two)*

Two groups discussed the challenges of attendance for pupils with caring responsibilities at home, for example if there is parental illness or domestic abuse:

> *If parents have been through a traumatic time they don't want to leave their parent… had one young lady that was probably caring for her younger siblings, um, and her mum had been subjected to some unpleasantness from her partner so it was easier to stay at home, protect mum and the siblings. (P14, Personalised Learning Assistant, Group Three)*

6.4.3 Peer factors

Only two factors related to peers were identified by practitioners: peer conflict and negative peer influence. Peer conflict was considered a risk factor for attendance problems, especially for girls. In particular, Group One discussed the role of social media, which they believed prevents some pupils being able to escape from difficult social relationships. Peer conflict was considered to have the potential to cause sudden and severe attendance problems in pupils who previously had good attendance.

> *It could have been something as tiny as a little bit of, maybe, verbal bullying you know, bit of name-calling, that they would have gone home and dwelled on it, or it could be a really serious bullying. (P15, Personalised Learning Assistant, Group Three)*

Practitioners in Group One also described the role of negative peer influence, for example when pupils were considered to *'get in with a bad group of kids' (P6, Head of Year Nine, Group One)*, or when a pupil with poor attendance caused classmates to question their own decision to attend:

> *There is a danger of it impacting on others as well isn't it because I used to have [pupil's name] and, and actually someone in the class would say 'well actually she's never in' and, you know, and 'why bother?', and they start questioning it as well. (P2, Special Educational Needs Co-ordinator, Group One)*

6.4.4 School factors

Group One described the UK National Curriculum as unsuitable for some pupils and believed that offering more vocational subjects, as well as a curriculum that could be tailored to individual needs, would improve attendance. However, the group agreed that this would be difficult, as P2 explained: *'A lot of schools aren't able to offer the appropriate curriculum anymore because of the cost of, and the pressures and expectations' (P2, Special Educational Needs Co-ordinator, Group One).*

Practitioners in Group Three identified academic stress, particularly during exam periods, as a potential cause of attendance problems. This was considered especially influential when combined with other life stressors:

> *I think the pressure, um, on achievement in the older years can be massive… they've got all these pressures going on amongst the family, or you know, outside and so on and then you add on GCSEs. (P16, Deputy Safeguarding Lead, Group Three)*

Times of change and transition were considered to be high-risk for the onset of attendance problems, including returning to school after the summer holidays, changing schools mid-term, and, in particular, the transition from primary to secondary school:

> *The difference is they have one teacher most of the time, you come here and they may have 15 different teachers in a week and those, not only the transition from primary to senior but transition to every hour of the day, across a big school can be just so mind blowing. (P11, Inclusion Manager, Group Two)*

Although some school factors were identified, they were discussed less frequently than factors related to the individual, their family and their peers. Group One, in particular, did not discuss any school factors except for the Curriculum. Although previous studies have also reported that school staff de-emphasise the role of school factors (Dannow et al., 2018; Gregory and Purcell, 2014; Gren-Landell et al., 2015; Malcolm, 2003) practitioners in this study went one step further, with Groups One and Three concluding that they do not believe school contributes to the problem for the majority of pupils:

> *When it boils down to it it's not school related is it? (P14, Personalised Learning Assistant, Group Three)*
>
> *No because if you removed all the barriers that they say are the issue with school, then you'd still have the same problems… So yes it's everything that happens outside school. (P16, Deputy Safeguarding Lead, Group Three)*
>
> *It's outside of school isn't it? (P1, Head of Key Stage Four, Group One)*
>
> *Yes, it's not anything we are doing. (P6, Head of Year Nine, Group One)*

Group Two, whilst not explicitly denying a role for school, did suggest that as young people spend most of their time away from school, the majority of influence comes from other sources:

> *Whilst we have continuing, consistency of them coming into school for five days perhaps, it is only 25% of their day isn't it, and 75% they're with others, so the influence we have is, is restricted, it's a big chunk of time but… there's a much bigger chunk of time outside of school hours. (P8, Assistant Principal, Group Two)*

6.5 Discussion

This qualitative study explored secondary school educational practitioners' beliefs about risk factors for school attendance problems, which was identified as an important topic during a study that investigated practitioners' broader experiences of attendance problems. Practitioners identified a range of factors they believed to be associated with poor attendance, which were grouped into those related to the individual, their family, their peers, and the school. We used these four broad groups of risk factors for the purposes of analysis because this grouping has commonly been utilised in previous research (Gren-Landell et al., 2015; Ingul et al., 2019; Ingul et al., 2012), and because these four domains of risk factors seemed to be endorsed by practitioners in this study. However, it is important to highlight that risk factors from each domain are unlikely to stand alone, and the potential for interaction between factors will be considered later in this discussion.

Factors related to the individual that were identified by practitioners in this study included mental health problems (particularly anxiety), a lack of resilience, behavioural problems, poor engagement with education, special educational needs, and physical health problems. The focus by practitioners in this study on anxiety as opposed to other mental health problems is interesting given that quantitative studies demonstrate depression to be an even greater risk factor (Egger et al., 2003; Finning et al., 2019c). Although behavioural difficulties were identified as a risk factor, practitioners were likely to label this as "naughty" or rebellious behaviour rather than a symptom of mental ill health, which has important implications for pupils given that previous research has shown that teachers use such labelling to drive their decisions over who needs support as opposed to punitive intervention (Torrens Armstrong et al., 2011).

Family factors identified included dismissive attitudes towards education, chaos or conflict at home, a lack of positive role model, a "soft" parenting style, parental anxiety, and young people with caring responsibilities. Similarly, previous research has demonstrated that family factors such as neglectful parenting, parental ill health, a lack of parental interest, and family conflict are associated with poor attendance (Gase et al., 2014; Hendron and Kearney, 2016; McShane et al., 2001). Practitioners in this study identified family history of attendance problems as a risk factor, which is supported by a UK survey that reported 26% of children whose parents had poor attendance missed school for reasons other than illness, compared to 10% of children whose parents had good attendance (Dalziel and Henthorne, 2005).

Practitioners identified two risk factors related to peers: peer conflict, and peer influence, for example when pupils were considered to make friends with a "bad crowd" who encouraged them to skip school. Previous research has demonstrated that peer conflict and bullying negatively impact on attendance and on mental health (Ingul et al., 2012; McShane et al., 2001), although practitioners in this study believed that even mild conflict could result in attendance problems. The reference by one practitioner in this study to *'something as tiny as a little bit of…verbal bullying' (P15, Personalised Learning Assistant, Group Three)* aligns with previous research that has demonstrated

school staff consider non-physical forms of bullying to be less severe than physical bullying (Hazler et al., 2001).

Finally, practitioners discussed the role of school factors in attendance problems and identified academic stress, an unsuitable curriculum (lack of vocational subjects; inability to tailor to individual pupils' needs) and school change or transition, as potential factors. Previous research shows that parents also believe academic stress and pressure, particularly around exams, is a cause of attendance problems (Dalziel and Henthorne, 2005). It is notable that overall, despite identifying several school factors, these were discussed less frequently than other factors, which supports findings from previous studies that teachers perceive individual and family factors to be the primary cause of attendance problems, while pupils and parents emphasise school factors (Dannow et al., 2018; Gren-Landell et al., 2015; Havik et al., 2014; Malcolm, 2003). Despite acknowledging some school-related risk factors, practitioners also stated that they do not believe school to be the cause of attendance problems. This is important given that a range of school factors are associated with poor attendance (Egger et al., 2003; Malcolm, 2003; Van Eck et al., 2017), and positive school factors such as supportive pupil-teacher relationships can reduce the impact of other stressors on negative educational outcomes (Hamre and Pianta, 2005). In addition, parents believe that supportive school staff are crucial for re-engaging pupils with poor attendance (Havik et al., 2014).

Taken together, our findings suggest a perceived lack of agency by school practitioners in terms of their ability to influence risk factors for attendance problems. For example, practitioners recognised academic stress as a risk factor. Previous studies have shown that teachers contribute to academic stress, particularly leading up to GCSEs (Putwain, 2011), but practitioners in this study did not acknowledge their potential role in contributing to, or being able to help mitigate, pupils' stress. Practitioners also recognised peer conflict and bullying as a risk factor but, again, did not discuss the role that they, either as individuals or at a school-level, might play in attenuating this risk, for example through emphasising a positive school culture or implementation of anti-bullying policies (Davies, 2013). School-based issues are those that school staff are likely to have some influence over and it is important that school staff

are encouraged to consider the ways in which they may be able to exert positive influence on attendance problems (Moore et al., 2019). Small, positive shifts in some of the things that school practitioners can control could be the difference between attendance and non-attendance, particularly for pupils who are experiencing other life stressors.

The framework presented here, which separated risk factors into those related to the individual, their family, school and peers, is a commonly utilised framework in the school attendance literature (Gren-Landell et al., 2015; Ingul et al., 2019; Ingul et al., 2012). Practitioners in this study appeared to endorse these categories, particularly given their emphasis on the importance of risk factors in some domains but not others. In reality, however, complex interplays exist between the young person, their friends, home-life and school, as reflected by mesosystems in Bronfenbrenner's ecological model (Bronfenbrenner and Morris, 2006). At times, the interplay between different domains was recognised by practitioners in this study. For example, practitioners believed that differences in resilience (individual factor) determines whether pupils who are experiencing peer conflict (peer factor) or difficulties at home (family factor) struggle to attend school, or manage to maintain good attendance. Practitioners in Group Three also discussed how the pressure of GCSEs (school factor) can be more problematic if the pupil also has pressures at home (family factor).

Risk factors for attendance problems are unlikely to occur in isolation, and successful intervention may require consideration of the interaction between risk factors within each domain (e.g. how mental health and physical health interact) and across domains (e.g. how teacher-pupil relationships are influenced by parental attitudes and experiences). Collaboration between the young person and adults across all of these domains is likely to be key for successful intervention (Gren-Landell et al., 2015; Heyne, 2019; Kearney, 2008a).

Given that risk factors for attendance problems were not included as a probe in the topic guide, it is notable that not only did all three groups spontaneously discuss this topic, but there was also a large degree of consistency both within and between the three groups in terms of the risk factors identified. In fact, while there were some subthemes that were only discussed by one or two of the

groups, there were no instances where groups expressed opposing views. This is interesting given that there was variation both in terms of the three schools included in the study and in terms of the experience and job roles of individual practitioners. For example, participants included teachers, members of senior leadership, SENCOs and support staff. This finding confirms that risk factors are common across the schools included in this study, and salient to practitioners working in a variety of roles.

6.5.1 Strengths and limitations

This study was reported in accordance with best practice guidelines for the reporting of qualitative studies (Tong et al., 2007). We interviewed practitioners in a variety of teaching and non-teaching roles, in order to gain diversity of experience. The three schools from which practitioners were sampled were also diverse in terms of their setting, size and absence rates. However, our opportunity sampling method was likely to have reduced diversity in other respects. All practitioners worked in mainstream state-funded academies, and all had experience of working with pupils with attendance problems and are likely to be interested in this topic area. Practitioners working in special education settings, and those less engaged with attendance problems may hold different views, which were not explored in this study. Practitioners in a variety of roles and with different levels of experience were interviewed in focus groups together, and it is possible that these differences may have prevented some practitioners from openly expressing their views. Data saturation was not formally assessed, and it is possible that additional themes may have been identified if further focus groups had been conducted. The option of conducting additional focus groups was discussed throughout the process of analysis, but was considered unnecessary as the data obtained was sufficiently rich in order for us to address our research aims.

6.5.2 Implications

Our findings suggest that secondary school practitioners are aware of many of the most common causes of attendance problems, but in general factors related to the individual and their family were highlighted, while school factors were de-emphasised. School factors are likely to be among those over which

practitioners have the greatest control and it is important that school staff are encouraged to consider the role of school factors and their ability to create change for pupils with attendance problems (Moore et al., 2019). Given that peer conflict and bullying are identified as risk factors, it is essential that schools implement anti-bullying policies, supplemented with the use of evidence-based bullying interventions where necessary (Davies, 2013). Schools should take steps to encourage pupils to develop healthy relationships with peers and engage in positive activities, for example through peer mentoring schemes or links to voluntary sector activities.

Academic stress was also recognised as a risk factor for attendance problems, particularly when combined with other life stressors. Following the UK Government's changes to GCSE examinations in 2017, there have been widespread reports of increased stress and declining mental health in secondary school pupils (e.g.Weale (2018)), although the impact of this has yet to be formally investigated. Findings presented here and in a previous study suggest that such stress may not only be harmful to pupils' mental health, but that it may also negatively impact attendance (Dalziel and Henthorne, 2005). Schools may be able to minimise the impact of exam stress by providing additional support, for example through the provision of skills-based training such as study skills or time management.

Practitioners identified mental health problems as a risk factor for school attendance, but largely focused on the influence of anxiety while neglecting to discuss the impact of other mental health problems such as depression or behavioural disorders. Indeed, behavioural difficulties were discussed in the context of "naughty" or "rebellious" pupils, without acknowledgement that such behaviour may in fact be a sign of a mental health problem. Research has demonstrated that depression is an even greater risk factor for attendance problems than anxiety (Egger et al., 2003; Finning et al., 2019c), and schools need to be aware that poor attendance may be a sign of a range of mental health difficulties, not only anxiety.

Practitioners identified that pupils with caring responsibilities may be at increased risk of attendance problems, for example when parents or siblings have mental or physical health problems, or when there is abuse in the home.

Developing strong school-family relationships may help to improve schools' knowledge of individual family circumstances, and enable them to offer additional support and flexibility for these pupils and signpost families to appropriate support services.

Practitioners believed that resilience is a key factor that distinguishes pupils who, despite experiencing adversity, maintain good attendance, from those who are frequently absent. Schools may be able to support pupils in developing personal resilience, for example through Personal, Social, Health and Economic (PSHE) lessons in the UK (PSHE Association, 2017). Positive relationships with caring adults and peers, and effective teachers and schools are identified as key correlates of resilience in young people (Sapienza and Masten, 2011). Therefore, school environments that promote positive relationships between pupils, and between pupils and staff, are likely to promote resilience and have the potential to positively impact pupils' health and educational outcomes.

6.5.3. Conclusion

This study identifies a range of risk factors that secondary school educational practitioners believe contribute to school attendance problems. These include some school factors, but the perception was that these factors were less important than individual, family and peer factors. Practitioners recognised the influence of mental health on attendance, but focused on anxiety rather than depression, behavioural disorders or other mental health problems. Given that school staff are best placed to directly influence factors related to the school, we suggest a number of steps that school staff can take that may be beneficial. This includes implementation of anti-bullying policies, promoting positive peer and pupil-teacher relationships, and collaborative working between young people, families and schools.

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Chapter Seven: Discussion

This chapter brings together the evidence from the original research studies presented in Chapters Three to Six. It begins with a summary of findings and a discussion of the ways in which these findings make an original contribution to knowledge, including consideration to some of the potential causal relationships between emotional disorder and school absence. I then discuss the strengths and limitations of the research, followed by the implications of the findings for clinical and educational practice. Some suggestions of directions for future research are presented, and the chapter finishes with some final concluding remarks. Because each of the original research studies presented in Chapters Three to Six included a discussion section, this chapter will focus primarily on the body of work as a whole in order to minimise repetition.

7.1 Contribution to knowledge

7.1.1 Contribution to knowledge on the association between emotional disorder and school absence

Findings from all four of the original research studies presented in this thesis, each using different research methodologies, suggest that emotional disorders are associated with absence from school. The systematic review (Study One) provided initial evidence that emotional disorders are associated with higher levels of various “types” of school absence. However, the ability to draw firm conclusions about these relationships was undermined by the limitations of the included studies as well as the substantial heterogeneity between studies, particularly in relation to the ways in which school attendance was measured. The two quantitative studies (Studies Two and Three) addressed many of the limitations of the previous research and provided high-quality evidence for a strong relationship between emotional disorder and school absence in a large sample of CYP in the UK. The findings suggested a particularly strong relationship for depression, and especially in relation to unauthorised absence. There was also some evidence to suggest that the association between emotional disorder and school absence is greater in secondary, compared to primary, school aged pupils. The longitudinal evidence presented in Study Three suggests that depression and teacher-reported emotional difficulties

predict unauthorised absence three years later, and that authorised absence predicts parent- and teacher-reported emotional difficulties three years later. Finally, findings from the qualitative study (Study Four) demonstrate that secondary school educational practitioners recognise mental health problems as a risk factor for attendance problems, although they focused almost exclusively on the role of anxiety as opposed to other mental health problems.

The conclusion that emotional disorder is associated with school absence has also been corroborated by two additional studies that have recently been published in this field. Lawrence et al. (2019) explored the relationship between mental health and school absence using data from 6,310 4 to 17 year olds in Australia, and found that CYP with anxiety or depressive disorders had higher rates of overall absence compared to those with no mental health disorders. Similarly, Lereya et al. (2019) explored the relationships between mental health and educational outcomes in a sample of over 15,000 11 to 12 year olds in England, and reported an increased risk of persistent absence (i.e. missing 10% or more of school sessions) for CYP with “high”, compared to those with “low”, levels of self-reported emotional difficulties according to the Strengths and Difficulties Questionnaire.

The findings from Studies One to Three (systematic review and quantitative studies) suggest that depression is more strongly associated with school absence than is anxiety. In the cross-sectional analysis (Study Two), after adjusting for confounders CYP with an anxiety disorder had 1½ times the rate of authorised, and twice the rate of unauthorised absence compared to those with no disorders. In comparison, CYP with a depressive disorder had nearly 2½ times the rate of authorised, and over 11 times the rate of unauthorised absence compared to those with no disorders. Furthermore, in the longitudinal analysis presented in Study Three, baseline depression, but not anxiety, predicted total and unauthorised absence at three-year follow-up. In their study of CYP in Australia, Lawrence et al. (2019) found that depression was the mental health disorder most strongly associated with school absence, more so than anxiety, ADHD and conduct disorders.

It remains unclear why depression in particular is so strongly predictive of school absence. As discussed in Chapter Five, it may be that the symptoms of

depression such as difficulty concentrating, insomnia and fatigue, are more detrimental to school attendance than the symptoms of anxiety. Depression is also associated with pervasive, consistent difficulties over a period of two weeks or more, while anxiety may be more transient or intermittent, and some anxiety disorders might not be expected to impact on school attendance (for example simple phobias where the phobic stimulus is not present in the school environment). However, depression is also more highly comorbid than anxiety. A review on the comorbidity of anxiety and depression in CYP concluded that between 15% and 75% of individuals with depression also meet diagnostic criteria for an anxiety disorder, while 10% to 15% of those with anxiety also meet diagnostic criteria for depression (Cummings et al., 2014). Similar rates of comorbidity were found in the BCAMHS dataset used in Studies Two and Three of this thesis, where 56% of CYP with depression at baseline also had anxiety, compared to 14% of those with anxiety who also had depression (see Section 5.4.1). Other research has shown that CYP with depression are also more likely than those with anxiety to meet diagnostic criteria for other mental health disorders, particularly conduct disorder and oppositional defiant disorder (Costello et al., 2003). Therefore, individuals with depression may experience more comorbidities and a greater overall level of functional impairment compared to those with anxiety, and it may be this rather than the symptoms of depression per se that are particularly detrimental to school attendance. However, it is important to note that the studies presented in this thesis did not set out to directly compare rates of school absence in individuals with and without psychiatric comorbidity, and this is an important topic for future research to consider.

Despite the evidence that depression is more predictive of school absence than is anxiety, the educational practitioners interviewed in Study Four (qualitative study) focused almost exclusively on anxiety when they discussed the role of mental health difficulties in contributing to attendance problems. It is possible that teachers and other school staff find it easier to recognise, and therefore have greater awareness of, the symptoms of anxiety compared to symptoms of depression. However, a study by Cunningham and Suldo (2014) found that teachers of 9 to 12 year old pupils in the US correctly identified 50% and 41% of

those who were experiencing high levels of depressive and anxiety symptoms, respectively, which suggests that teachers are actually slightly better at correctly identifying depression, compared to anxiety. Practitioners in the qualitative study presented in Chapter Six also explained that the fluctuating nature of anxiety makes it difficult to identify and understand, and in a recent study by Reardon et al. (2019) 73% of parents agreed that *"my child's anxiety comes and goes in phases"* was a barrier to recognising the need for professional help. This suggests that the fluctuating nature of anxiety, in comparison to the more pervasive and consistent symptoms of depression, may make the former particularly challenging for adults to identify and manage. Hence, it seems unlikely that ease of identification is the reason why educational practitioners have greater awareness of anxiety, compared to depression, as a risk factor for attendance problems. Future research that explores the processes through which school staff identify pupils who are experiencing emotional difficulties would help to further our understanding and would have important implications in terms of supporting school staff to identify emotional disorders.

Study Three provided evidence that depression and teacher-reported emotional difficulties predict overall absence and, to an even greater extent, unauthorised absence, three years later. These findings are largely in line with those from Study One (systematic review), which provided tentative evidence for a longitudinal relationship between depressive (but not anxiety) symptoms and subsequent absence, particularly unauthorised. It is unclear why depression would be more predictive of unauthorised than authorised absence. It may be that CYP with depression choose not to discuss their symptoms, or the impact of those symptoms on their education, with adults around them. Given the low rates of correct identification of emotional disorders by parents, teachers and even clinicians (Burke et al., 2016; Cunningham and Suldo, 2014; Parker et al., 2018; Reardon et al., 2018), authorisation of school absences may rely on direct communication from the young person to these adults regarding their mental illness and its impact on their school attendance.

It may also be the case that, even when school staff are aware of a pupil's difficulties with depression, they do not recognise such difficulties as signs of

"illness", do not consider them a reasonable reason for school absence, and as such, schools may choose not to authorise any associated absences. Anecdotal evidence and personal communication with members of Not Fine In School (NFIS), a parent-led organisation that supports families who are affected by school attendance problems, suggests that while schools are entitled to request medical evidence for illness-related absences, there are many barriers to obtaining such evidence when it comes to mental health problems. This includes, for example, strict guidelines on the nature of the evidence required (e.g. that it has to be provided by a senior medical professional or consultant; or has to expressly state that the young person cannot attend for a given period of time) and difficulties accessing mental health services. Therefore, in practice it can often take parents many months to obtain medical evidence, during which time the school is permitted to mark the absence as unauthorised (Morgan, 2019).

The systematic review identified little previous research regarding the effect of school absence on *subsequent* emotional disorder, and no previous studies had specifically explored this relationship for authorised versus unauthorised absence. Study Three (quantitative bi-directional study) therefore provided the first evidence of its kind and showed that higher rates of authorised absence predict emotional difficulties, as reported by parents and teachers, three years later. Children and young people who miss a lot of school may be at an increased risk of experiencing emotional ill health as a result of missing out on many of the usual social and educational opportunities that are available to their peers. However this group might also include particularly vulnerable CYP, for example individuals with chronic physical conditions or who have caring responsibilities at home, and these young people may be at an increased risk for subsequent emotional disorder regardless of earlier school attendance. It is therefore difficult to be sure whether: (a) school absence is on the causal pathway between these factors and emotional difficulties (i.e. that these factors lead to increased school absence, which in turn negatively impacts emotional health), or (b) these factors are independently associated with an increased risk of both emotional disorder and school absence. Given that 75% of authorised absences are due to illness (Department for Education, 2019c), it may be that

high rates of authorised absence are a proxy for physical health problems, and absence may not be predictive of subsequent emotional difficulties independently of poor physical health. The potential causal pathways between emotional disorder, school absence, and some of these other risk factors are discussed in further detail in Section 7.1.2 below.

Findings from the moderator analysis presented in Study Two suggest that the association between emotional disorder and school absence may be greater for secondary-, compared to primary-school aged pupils, and Lawrence et al. (2019) reported a similar effect in their study of CYP in Australia. The educational practitioners interviewed in Study Four (qualitative study) also believed mental health problems to be a greater risk factor for attendance problems in secondary-, compared to primary-school aged pupils, although all practitioners were working in secondary schools at the time of interview and it is not known what level of experience they had with regards to attendance problems in primary school aged pupils. The prevalence of emotional disorders and the overall rates of school absence are both higher at secondary school age (Department for Education, 2019c; Vizard et al., 2018), but findings presented here suggest that the association between them is also greater at this age. It is possible that the symptoms of emotional disorders are more impairing to school attendance in adolescents compared to younger children, or it may be other facets of the school environment that are particularly detrimental to attendance for secondary school pupils who also have emotional disorders, such as academic demands, exam stress or social pressures. Furthermore, the school attendance of younger children is largely driven by parental decision-making, whereas adolescents are likely to have greater ownership over their own decision to attend school or not, which may be an additional contributing factor. That said, the findings of the moderator analyses should be interpreted with caution given that age/school-level was only found to be a statistically significant moderator for three out of the 12 analyses performed (see Section 4.4.3 and Appendix Five), and given that false positives are common in moderator analyses due to multiple comparisons (Burke et al., 2015).

7.1.2 Contribution to understanding how emotional disorder and school absence are linked

As previously discussed (see Section 1.6.1), causality is difficult to determine from observational research. However, the Bradford Hill criteria can be used to assist researchers in assessing the likelihood of a causal relationship between two variables (Bradford Hill, 1965; Lucas and McMichael, 2005). This section discusses the Bradford Hill criteria in the context of the evidence presented in this thesis. This is followed by a discussion of some of the potential causal pathways between emotional disorder and school absence.

The nine Bradford Hill criteria are as follows:

- **Strength:** strong associations are more likely to be causal than weak associations. The evidence provided in this thesis suggests a strong association between emotional disorder and school absence, particularly with respect to depression.
- **Consistency:** a causal explanation is more likely if the same answer is achieved in a variety of different situations. Findings from all four studies included in this thesis, involving different settings and different research methodologies, are suggestive of an association between emotional disorder and school absence. That said, the nature and strength of the relationship varied depending on the type of emotional disorder/school absence, as previously discussed (see Section 7.1.1). Therefore there is stronger evidence of a causal association for some types of emotional disorder/school absence compared to others.
- **Specificity:** this criterion is often stated to mean that any exposure may give rise to only one single outcome, although it is widely recognised that in most human disease states this is not the case, and arguably this criterion may be particularly unlikely to apply to mental health problems (Lucas and McMichael, 2005). This thesis did not explore whether emotional disorder or school absence were associated with other outcomes, but clearly it is unlikely that they are only associated with each other. Indeed, previous research has demonstrated that emotional disorder and school absence *are* both related to other outcomes. For example, emotional difficulties predict other adverse academic outcomes

besides absence, such as poor attainment and school failure (Riglin et al., 2014), while Epstein et al. (2019) demonstrated that poor attendance is a risk factor for self-harm and suicidal ideation.

- **Temporality:** the cause must occur before the effect. Study Three demonstrated potential bi-directional relationships between emotional disorder and school absence, although this appeared to depend on the particular measures used. Specifically, depression and teacher-reported emotional difficulties predicted subsequent unauthorised absence, and authorised absence predicted subsequent emotional difficulties.
- **Biological gradient:** the likelihood of a causal association is increased if there is a biological gradient or dose-response curve. The studies in this thesis were not designed to test for a dose-response relationship; future research could specifically explore whether a gradient exists for the relationship between increasing levels of emotional difficulties and school absence.
- **Plausibility:** biological plausibility provides reassurance, but is not a necessary criterion for a causal explanation since it depends on the current state of knowledge in the field. As previously discussed (see Chapter Five), it is plausible for emotional disorder to cause school absence, and it is also plausible for school absence to cause emotional disorder. Some of the potential biological, psychological and sociological pathways between emotional disorder and school absence are presented in Figure 24 below.
- **Coherence:** a causal explanation should fit with what is known about the natural history and biology of a disease. Support for this criterion includes the fact that rates of both emotional disorder and school absence increase as age increases, and that certain groups of CYP who are at a greater risk of emotional disorder are also at an increased risk of school absence (Department for Education, 2019c; Havik et al., 2015a; Melvin et al., 2019; Vizard et al., 2018).
- **Experiment:** preventive actions taken on the basis of a causal association should alter the frequency of the outcome. Few studies have investigated how interventions for emotional disorders affect school

attendance, nor how interventions for attendance problems influence emotional outcomes. The only evidence to-date for interventions that jointly benefit emotional health and school attendance come from evaluations of CBT programmes that specifically aim to target both of these outcomes (Elliott and Place, 2017; McKay-Brown et al., 2019). While this is certainly promising for the CYP affected by these difficulties, it does not help to establish a causal relationship between emotional disorder and school absence. In fact, a meta-analysis by Maynard et al. (2018) revealed that overall, psychosocial interventions for CYP with school refusal (i.e. anxiety-based school absence) are effective at improving attendance but are not associated with improvements in symptoms of anxiety. However the authors suggested this may be because returning to school increases anxiety in the short-term, and few studies had included long-term follow-ups. Further research is required that explores whether interventions that target (and lead to reductions in) emotional difficulties also result in concurrent improvements in school attendance, and vice-versa. Such research should aim to include longer-term follow-ups, for example following CYP for 12 months or more.

- **Analogy:** clear-cut analogies may add to the weight of evidence for otherwise weak associations. This criterion is not necessary in order to demonstrate causation, but can be helpful in situations where the evidence overall is weak, or where accurate measurement of variables is difficult, for example in the case of the association between passive smoking and lung cancer (Lucas and McMichael, 2005). These were not particular issues for the factors of interest in this thesis, and arguably this criterion does not help to establish a causal association between emotional disorder and school absence.

Taken together, the findings presented in this thesis suggest a strong relationship between emotional disorder and school absence, which may be causal and bi-directional in nature. Theoretically, there are several different mechanisms that might explain how emotional disorder and school absence are linked, many of which have already been discussed in this thesis. Here I bring

some of the potential explanations together and, for clarity and ease of interpretation, I present them in a schematic diagram (see Figure 24).

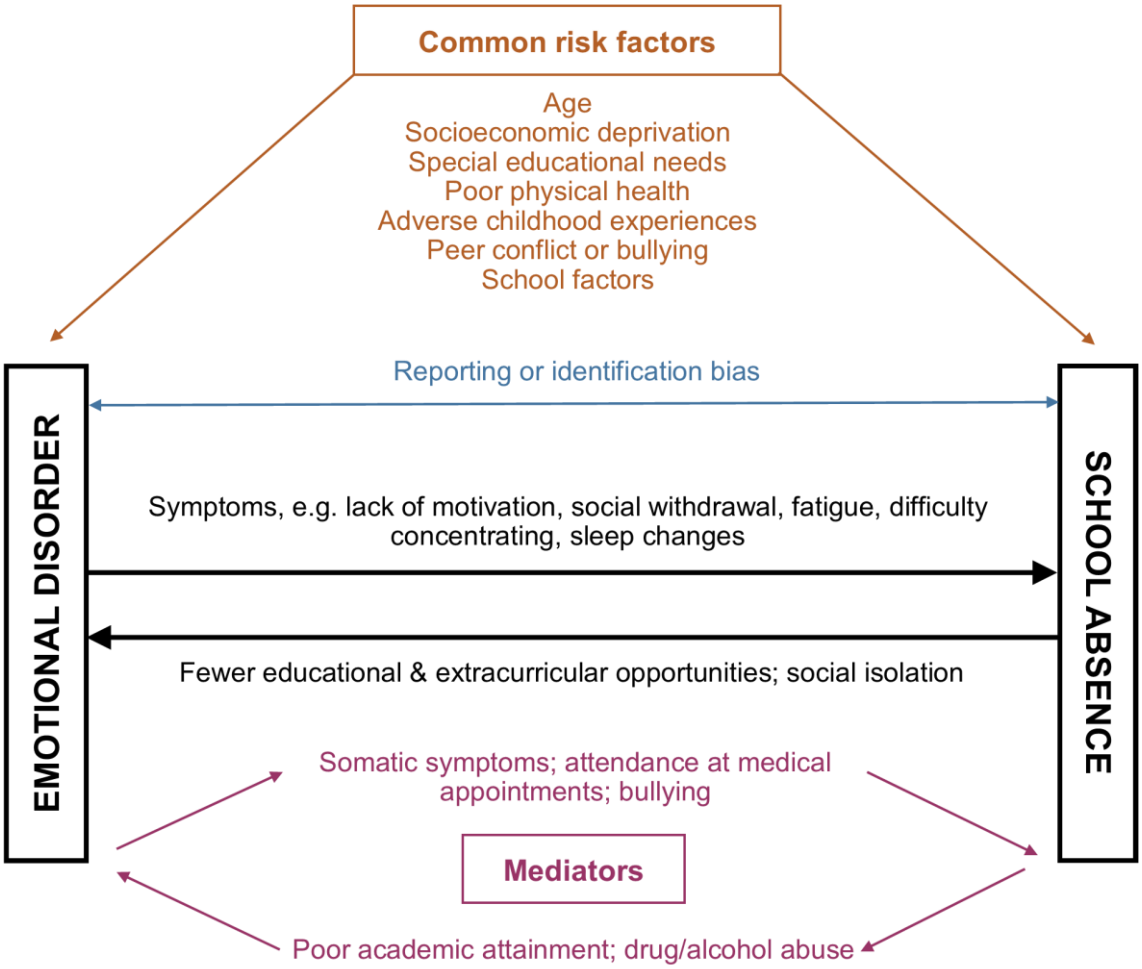

Figure 24. Diagram showing potential explanations for the association between emotional disorder and school absence

The findings from this thesis provide clear evidence that emotional disorder and school absence are related. The findings from Studies Two and Three (quantitative studies) demonstrated that this relationship remains even after adjusting for many of the "common risk factors" (i.e. potential confounders) highlighted in orange in Figure 24, and suggests that an independent relationship between emotional disorder and school absence is likely. However, it is important to note that not all potential confounders could be controlled for in Studies Two and Three, either because they were not measured in the BCAMHS (e.g. school factors), or because it was believed that they might lie on the causal pathway between emotional disorder and school absence (e.g.

measures of physical or general health) and hence including them may have introduced bias. There is also the possibility of additional, unidentified confounders that have not been included.

Highlighted in purple text in Figure 24 are some of the potential mediators from emotional disorder to school absence, and vice versa. As previously discussed, somatic symptoms such as headaches and stomach-aches are common in CYP with emotional disorders, and these symptoms may be one of the mechanisms through which emotional disorders impact attendance (Campo, 2012). Frequent attendance at medical appointments, either related to the emotional disorder itself or to seek help for somatic symptoms, may also contribute to school absence for some individuals. Equally, individuals with chronic physical conditions are at an increased risk of experiencing both emotional disorders and poor school attendance (Glazebrook et al., 2003; Hysing et al., 2007; Lum et al., 2017; Pinquart and Shen, 2011), and there has been little research to explore the causal pathways between these variables or to establish whether they might reinforce each other over time.

Whilst bullying has been included as a common risk factor in Figure 24, it has also been included as a potential mediator, because research shows that CYP with emotional disorders are more likely to be *subsequently* bullied compared to their peers who are mentally healthy, which may itself result in school absence in an attempt to avoid the bullying behaviour (Arseneault et al., 2010; Schoeler et al., 2019). There are also potential mediators of the relationship from school absence to emotional disorder. For example, CYP who are frequently absent from school are at an increased risk of poor academic attainment as well as drug and alcohol abuse, and these factors may subsequently increase the risk of emotional disorder (Heyne et al., 2019b; Lereya et al., 2019; Panayiotou and Humphrey, 2018).

Finally, the pathway highlighted in blue in Figure 24 represents potential sources of bias that may over-inflate the measured relationship between emotional disorder and school absence. This might include reporting biases whereby parents or teachers are more likely to report high levels of school absence in CYP where there is a known emotional disorder, or where clinicians are more likely to diagnose an emotional disorder if there is a high level of

school absence. However, whether these biases are present remains to be tested empirically, and these pathways, alongside the other pathways presented in Figure 24, provide testable hypotheses that could be addressed in future research.

Mediation analyses could be used to explore the evidence for some of the potential causal pathways, while the use of more sophisticated statistical techniques such as structural equation modelling could allow for the examination of complex interactions and causal pathways between multiple variables in a single model. A priority for future research should be to explore whether factors such as poor physical health or poor parental mental health are indeed mediators of the association as was proposed in Chapters Four and Five of this thesis. If they are found *not* to play a mediating role but instead are common causes or confounders of the association between emotional disorder and school absence, then adjusting for and explicitly modelling these factors in future statistical analyses would be important and may result in changes to effect estimates. The impact of reporting or identification biases could be explored in statistical models that, for example, adjust for clinician-diagnosed emotional disorders when the outcome is parent- or teacher-reported emotional difficulties.

7.2 Strengths and limitations

The research presented in this thesis benefitted from several different studies that adopted different methodological approaches, each with their own strengths and limitations. As the strengths and limitations of these individual studies were discussed in detail in their respective chapters, this section provides a brief overview of the key points and then considers the overarching strengths and limitations of the programme of work as a whole.

The systematic review presented in Chapter Three used gold-standard methods for synthesising and critically appraising empirical evidence, and provided a broad understanding of the relationship between emotional disorder and school attendance based on findings from previous literature. One of the main strengths of the systematic review, besides its rigorous methodology, was its broad scope. This enabled synthesis of the evidence for various different

presentations of emotional disorder (e.g. anxiety, depression and emotional difficulties; measured via diagnostic interview or measures of symptoms; reported by CYP, parents and/or teachers) in relation to any “type” of attendance problem (e.g. overall absenteeism, unexcused absence/truancy, excused absence, school refusal; measured in any way). However, the wide diversity in terms of how these constructs were defined and measured by individual studies was also a limitation, because it restricted the extent to which findings could be coherently synthesised. Meta-analysis could only be performed for sub-samples of studies and, even where they were possible, they each included only a very small number of studies. This results in less precise summary estimates compared to meta-analyses with a larger number of studies. Even when narrative synthesis was used, the vast number of possible combinations of emotional disorder and school absence constructs meant that it was difficult to draw firm conclusions about the association between emotional disorder and school absence as a whole.

Analyses of a large UK population survey and its three year follow-up in Studies Two and Three allowed for the relationship between emotional disorder and school absence to be investigated in greater depth in a UK context, and addressed many of the limitations of the previous research identified by the systematic review. The BCAMHS dataset used for these studies involved a large, nationally-representative sample of CYP that spanned the entire age-range of compulsory education in the UK. It included a diagnostic measure of emotional disorders in addition to measures of emotional symptoms. It also included a measure of both authorised and unauthorised school absence, which was important because the systematic review established that most previous research in this field had focused on overall or unauthorised absence, and there was a lack of research specifically in relation to authorised absence, despite this accounting for 73% of all absences in England (Department for Education, 2019c). Furthermore, the three year follow-up data allowed for exploration of longitudinal, bi-directional relationships between emotional disorder and school absence, which had also been largely neglected in previous research.

However, the BCAMHS was not a cohort study with multiple follow-ups, but rather a cross-sectional study with a single follow-up. Future research utilising

data from cohort studies would allow examination of the relationship between emotional disorder and absence at different ages throughout childhood, as well as exploration of trajectories and causal pathways between these and other factors. An additional limitation of the BCAMHS was the large amount of missing data for teacher-reported variables, which included absence. The use of multiple imputation minimised the impact of bias due to missing data, and the sensitivity analyses using complete cases provided reassurance that the impact of the missing data was minimal in these analyses. However, the extent of missing data meant that child-reported emotional difficulties, although collected from individuals aged 12 and over in the BCAMHS, could not be included in the analyses presented in this thesis. This was because the amount of missing data when child-reported emotional difficulties and school absence were combined was deemed too great (see Chapters Four and Five). Given that discrepancies between different informants (e.g. young people, parents, teachers, clinicians) are common in child mental health settings, the incorporation of ratings from multiple informants is considered a key component of best practice in the assessment of mental health problems in this population (De Los Reyes, 2011). While the quantitative studies incorporated both parent- and teacher-reports, future research that is able to additionally incorporate self-reports of emotional difficulties would strengthen the evidence.

Finally, the qualitative study presented in Chapter Six provided a deeper understanding of the views of educational practitioners about risk factors for attendance problems, and enabled an exploration of the views of those who work day-to-day with the CYP who experience the issues addressed in this thesis. This is especially important given the increasing emphasis on the role of schools in supporting the mental health of CYP. Qualitative research is ideal for exploring beliefs, attitudes and experiences, and this study allowed investigation of whether the views of practitioners are reflective of the evidence obtained from the quantitative studies in this thesis, and from previous research in this field. A key limitation of the qualitative study was the small sample size (16 participants from three focus groups). While a broad range of views were captured, it is possible that additional important themes would have been identified if a greater number of focus groups had been conducted, particularly as data saturation

was not formally assessed. Furthermore, the qualitative study focused on the views of practitioners working in secondary schools because rates of both school absence and emotional disorder are greater in secondary compared to primary schools. However, future research should aim to explore the views of those working in primary schools, special schools and alternative educational provision, as these may differ from the views of secondary school practitioners. Special schools and alternative educational settings may be especially important because rates of absence and emotional disorder are substantially higher in these settings compared to mainstream schools, although the overall number of CYP attending these schools is much lower (Department for Education, 2019b; Department for Education, 2019c).

The studies presented in this thesis focused on school absence in relation to emotional disorders, and other types of mental health conditions were not taken into account. It is possible, and even likely, that other types of mental health condition such as ADHD, autism spectrum disorders and conduct disorders are also associated with an increased rate of school absence, and exploring these additional relationships is an important area for future research to address. That said, emotional disorders are a particular area of concern due to their increasing prevalence, low rates of treatment utilisation and poor identification by key adults. Given that schools report being most concerned with mental health problems that impact on the classroom environment, the disparity in the rate of identification and treatment for emotional versus other types of disorders has the potential to be exacerbated as the role of schools in supporting the mental health of CYP continues to be encouraged in health and education policy in the UK.

A final limitation is that this thesis focused on the relationship between two specific variables, while in reality risk factors for mental health problems and other adverse outcomes, such as school absence, rarely occur in isolation. It is therefore difficult to disentangle and delineate the impact of a single risk factor from all others. This is important given that a variety of factors have been demonstrated to be associated with both emotional disorder and school absence, alongside evidence that it is the total number of risk factors, and the balance between risk and protective factors, that most strongly predict an

individual's likelihood of experiencing either of these outcomes (Bellis et al., 2018; Ingul and Nordahl, 2013; Raviv et al., 2010). The need to recognise the complex interplay between psychosocial, environmental, biological and genetic factors in contributing to mental health problems is being increasingly emphasised in the literature (e.g. Patel et al., 2018). Such an approach may also be facilitated by models such as Bronfenbrenner's bioecological model, which emphasises the need to consider the influence of the entire ecological system around the child in order to understand their development (Bronfenbrenner and Morris, 2006). Nonetheless, understanding the relationship between emotional disorder and school absence independently of other risk factors still has important implications for clinical practice, education and policy, as detailed in Section 7.3, and for future research in this field, as detailed in Section 7.4.

7.3 Implications

Clinical and educational professionals should be aware that high rates of school absence could signify that a young person is experiencing emotional ill health. This may be true regardless of the "type" or nature of the absence, although unauthorised absence may be a particularly strong red flag for emotional disorder. It seems intuitively plausible that a change from previous patterns of attendance may be of particular concern and could be especially important for clinicians and schools to monitor, but this needs to be explored empirically. Clinical professionals could easily and routinely enquire about patterns of school attendance during consultations with CYP and their parents/carers, which may help them to better understand the full clinical picture in addition to providing opportunities for early intervention for attendance problems (Hawkrigg and Payne, 2014). This could be particularly pertinent for the new school-based Mental Health Support Teams, including Education Mental Health Practitioners (see Section 1.2), for whom attendance data are likely to be easily obtainable, alongside regular opportunities for communication with school staff regarding pupils who may be experiencing difficulties. Findings support the idea that attendance data could be used as part of school-based screening approaches for the identification of common mental health conditions like anxiety and depression. This is particularly important given that the majority of schools

currently use ad hoc teacher nomination methods to identify pupils who are experiencing mental health problems, even though teachers' ability to correctly identify mental health problems, particularly emotional difficulties, is poor (Cunningham and Suldo, 2014; Marshall, 2017; Parker et al., 2018).

However, it is important to highlight that although findings demonstrate a clear relationship between emotional disorder and school absence, absence is neither necessary nor sufficient to explain the presence of emotional disorder. Many CYP who are frequently absent from school do not have an emotional disorder, and conversely many of those with emotional disorders maintain good attendance. For example, Ingul and Nordahl (2013) found that only 21% of adolescents with high rates of absence (missing 15% or more of school days) in Norway had high levels of self-reported anxiety symptoms, while 78% of those with high levels of anxiety had low rates of absence (less than 15% of school days). These authors also demonstrated that what differentiates anxious pupils who maintain regular attendance from anxious pupils who are frequently absent is greater resilience, fewer symptoms of social anxiety and panic disorder, fewer family problems, and a lower total number of risk factors. This highlights the importance of considering the entire clinical picture and a broad range of potential risk factors for both emotional disorder and school absence, rather than focusing on any one risk factor in isolation. Nonetheless, given that attendance data are routinely collected and easily monitored, such data may serve as a helpful component of school-based screening methods, perhaps used alongside other methods such as universal screening with symptom questionnaires.

My findings add to the existing literature that demonstrate the substantial and broad-reaching impairments that emotional disorders may cause to CYP, including the potential to reduce their attendance at school. Since school is a key context for CYP's development, and poor school attendance is associated with a variety of adverse outcomes in education, employment, health and relationships, the results presented here highlight the importance of early identification of, and intervention for, emotional disorders in CYP. Timely intervention serves not only to reduce the immediate distress caused to the young person and their family, but also has the potential to interrupt a negative

developmental trajectory resulting from the impact of these disorders on school attendance.

The qualitative study presented in Chapter Six suggests that educational practitioners emphasise the role of factors related to the young person and their family in contributing to attendance problems, while they de-emphasise the role of school factors. Conversely, previous research has shown that CYP with attendance problems and their parents emphasise the role of factors related to school (Dannow et al., 2018; Havik et al., 2014). In reality, individual, family and school factors are likely to contribute in varying degrees for most CYP. The importance of adopting a team-based, problem-solving approach in responding to both attendance and mental health problems is frequently emphasised (Department for Education, 2016c; Finning et al., 2017a; Gren-Landell et al., 2015; Havik et al., 2014; Kearney and Graczyk, 2014; White et al., 2017), yet the focus on factors outside of their own setting may result in a sense of "blame" between schools and families, and is likely to be harmful to efforts to cultivate a collaborative team approach. School staff may benefit from education regarding the potential role of school factors in contributing to attendance problems, and the ways in which they can best support pupils, including those with mental health problems, to maintain regular attendance. Ultimately, school staff are more likely to be able to effect change within the school setting than outside of it.

The findings from this thesis provide additional support for the suggestion that academic achievement and mental health are not a "zero-sum game" (Bonell, 2018; Bonell et al., 2014; Humphrey, 2018), and that taking steps to improve CYP's emotional health has the potential to improve their attendance at school. Since school attendance and academic attainment are intrinsically linked, efforts to support pupil's emotional health are also likely to result in improved attainment (Department for Education, 2016b; Hancock et al., 2013). Given that schools' core function is to promote educational attainment, the increasing focus on the role of schools in supporting the mental health of CYP serves to benefit schools in addition to benefitting CYP and society more broadly. As explained in Chapter Six, there are many steps that schools may be able to take to help support pupils with attendance problems, and many of these steps also

have the potential to support pupils' emotional health and promote wellbeing. Creating a positive school culture, ensuring that school is a safe and affirming place to be, having clear policies on behaviour and bullying, taking a whole-school approach to promoting good mental health, providing opportunities for positive peer relationships, and cultivating a sense of belonging for staff and pupils, may all help to positively influence pupils' emotional health, as well as their readiness to learn and engage with school (Chang et al., 2019; Department for Education, 2016c; Hawkrigg and Payne, 2014; Public Health England, 2016; White et al., 2017). More formal school-based interventions, most commonly utilising CBT approaches, show promise when focused either on preventing or reducing the symptoms of emotional disorders (Weare and Nind, 2011; Werner-Seidler et al., 2017), or on addressing school attendance problems (Heyne, 2019). However, few studies have explored secondary outcomes in terms of whether interventions targeted at emotional disorders improve school attendance, nor whether interventions for attendance problems positively influence emotional health; this could be explored in future research.

Finally, the findings from this thesis further emphasise the need for school attendance researchers and practitioners to work towards achieving consensus on how best to conceptualise attendance problems. The diverse methods of measurement and use of different thresholds, in particular, caused substantial difficulties in terms of the ability to synthesise the evidence and draw broad conclusions in Study One (systematic review). The inconsistent use of terminology also creates confusion and makes it difficult to compare findings from different studies without extensive evaluation of the precise methods used, and has the potential to hamper progress in the field. Terminology is important not just because of its impact on researchers' ability to synthesise and make sense of evidence, but because it has the potential to drive attitudes and behaviours of clinicians, educators, and policy-makers. For example, research has demonstrated that teachers and other school staff view school refusal more sympathetically than they do truancy, and are more likely to emphasise supportive, nurture-based interventions for the former, and punitive interventions for the latter (Finning et al., 2017a; Torrens Armstrong et al., 2011).

7.4 Directions for future research

Throughout the preceding chapters and in the sections above, I have alluded to some of the areas that I believe are important for future research in this field. Below I summarise my main ideas for future research and propose suggestions for specific research methods that could be used to address these ideas.

An important topic for future research is to examine the potential causal pathways between emotional disorder and school absence. Figure 24 (see Section 7.1.2) identifies some of the potential pathways that could be explored using mediation analyses or developmental cascade models. The latter are statistical models that utilise a structural equation modelling approach, which allow for exploration of causal relationships, pathways and interactions between variables over time. This method has previously been used to explore longitudinal causal pathways between internalising problems, externalising problems and academic achievement (Masten et al., 2005; Panayiotou and Humphrey, 2018), as well as between peer victimisation, depression and academic achievement (Liu et al., 2018). Developmental cascades could be used to explore the longitudinal pathways between emotional disorder, school absence, and some of the potential mediators identified in Figure 24 (see Section 7.1.2). The benefit of developmental cascade models over, for example, traditional mediation approaches, is that they allow for examination of complex interactions between multiple variables, at multiple time-points, within a single model, whilst simultaneously adjusting for the relationships within each variable over time. Identifying causal pathways between these variables would have direct implications for intervention and would highlight potential ways to minimise the negative impact of emotional disorders on school attendance. In addition, establishing whether or not these variables are on the causal pathway between emotional disorder and school absence is important because if they are found *not* to lie on the causal pathway, then future research in this field should adjust for these variables.

As previously discussed (see Section 7.1.1), one of the potential reasons why depression might be a stronger predictor of absence compared to anxiety, is that individuals with depression have higher rates of comorbidity with other mental health conditions compared to those with anxiety. However, whether this

is the reason for depression being more strongly predictive of school absence has yet to be empirically tested. Future research should aim to examine whether it is depression itself or the effect of comorbidity that accounts for this finding. This could involve regression models that compare rates of absence in CYP with and without comorbidity, for example depression only versus depression in addition to other disorders; and anxiety only versus anxiety in addition to other disorders. However, a core issue in terms of exploring the impact of comorbidity is that these conditions are relatively rare at a population level and thus, very large samples are required to ensure adequate statistical power. For example, in the BCAMHS dataset, only 68 individuals met diagnostic criteria for depression in the baseline survey (see Chapter Four). If this group had been further separated into those with and without other types of disorders, the analysis would have had unacceptably low statistical power. In order to successfully explore the effect of comorbidity in a population sample, a very large dataset would be required (power calculations could be used to determine the precise sample size needed) that utilises diagnostic assessments of mental health disorders in addition to a measure of school absence. I am aware of no datasets in the UK that are currently available that would meet these criteria, although suitable datasets from other countries may exist and could be explored. Alternative options might be to use data from clinical samples and/or administrative data. An example is the Clinical Record Interactive Search (CRIS) dataset, which links health and education data for 4 to 16 year olds who have accessed mental health services in one of four regions in London (Downs et al., 2017). However, a limitation of clinical samples is that they may be affected by selection biases due to differential access to services. In practice, all datasets are likely to have their own strengths and limitations, so a combination of studies utilising different datasets may provide the strongest evidence.

Although schools most commonly rely on ad hoc teacher nomination methods to identify pupils with mental health problems (Marshall, 2017), there has been little research to explore the processes through which teachers identify these pupils. Such research could help to understand why school staff struggle to accurately identify pupils who are experiencing mental health problems, particularly emotional disorders. This is important given that the practitioners

interviewed in Study Four (qualitative study) emphasised the role of anxiety in attendance problems, despite the findings from Studies One to Three suggesting that depression is even more strongly predictive of absence than is anxiety. This could be explored by conducting a quantitative survey and/or qualitative interviews with school staff to enquire further about how they utilise ad hoc identification methods, including, for example, the signs and symptoms they look out for, and how they distinguish between normal childhood emotions and experiences versus symptoms of disorder. Findings from a study such as this would provide further insight into how school staff identify emotional disorders, and would help to inform current and future training programmes for teachers and other staff working in school settings.

While the findings presented in this thesis demonstrate an association between emotional disorder and school absence, little research has specifically investigated the effectiveness of utilising attendance data as a screening tool to identify emotional disorders, even though the Department for Education endorses the use of attendance data for this purpose (Department for Education, 2016c). A recent systematic review on the effectiveness of school-based methods for identifying CYP at risk of, or currently experiencing, mental health difficulties concluded a need for further research to identify precise rates of false positives and false negatives yielded by different methods, in addition to effectiveness trials to establish which methods most accurately identify which conditions (Anderson et al., 2019). This study also concluded that there is some evidence to suggest that universal screening may be the most effective method of identification, although the rate of false positives generated by this approach is high. Combining attendance data with universal screening approaches may improve the effectiveness of school-based screening and reduce the rate of false positives. However, given that a substantial proportion of CYP with emotional disorders maintain good attendance, and that many of those who are frequently absent *don't* have emotional disorders (see Section 7.3), it is unlikely that attendance data alone will prove effective as a screening method. Future research should investigate the effectiveness of attendance data, alone and/or combined with other methods such as teacher nomination or universal

screening approaches, in order to fully understand its utility as a mental-health screening method.

An additional problem is that there is currently little guidance in terms of how to implement the use of attendance data as a screening tool and, in particular, the threshold at which absence should become a "red flag" for emotional disorder. As described in Section 1.3.1 of this thesis, the threshold most commonly utilised in education policy is 10% of school sessions missed, at which point a young person is considered to be a "persistent" or "problematic" absentee (Allison and Attisha, 2019; Department for Education, 2019c; Jordan and Miller, 2017). However, there is little evidence to confirm at what threshold absence becomes a marker for emotional ill health, and researchers have endorsed a variety of different thresholds for persistent or problematic absence, ranging from 1% to 25% (Heyne et al., 2019a; Kearney, 2008a; Siriwardhana et al., 2013; Skedgell and Kearney, 2018). Future research should aim to identify the threshold at which absence becomes a strong marker for emotional difficulties and other adverse outcomes. This could involve, for example, the use of Receiver Operating Characteristic (ROC) curves, which explore the diagnostic ability of a binary classifier (in this case, persistent absence) as its discrimination threshold is varied (Park et al., 2004). Establishing an evidence-based threshold will not only support efforts to improve the identification of emotional disorders in school settings, but will also provide a clear threshold for researchers in this field to utilise.

Developing consensus on the terminology and conceptualisation of attendance problems more broadly is also an important priority for future research, as has been alluded to both throughout this thesis and by other researchers in the field (Heyne et al., 2019a; Heyne et al., 2019b; Kearney, 2008b; Pellegrini, 2007). In 2018 the International Network for School Attendance (INSA) was formed by 21 academics and practitioners from 11 countries, all of whom are involved in school attendance research and/or practice. One of INSA's primary aims is to "achieve consistency in conceptualising, classifying, and communicating about attendance problems" (Heyne et al., 2019a), although it is currently unclear how this might be achieved in practice. One possibility is to conduct a Delphi survey, which is a group facilitation technique designed to transform expert opinion into

group consensus (Hasson et al., 2000). This approach typically involves iterative rounds of quantitative and/or qualitative data collection, with results from each round fed back to participants and incorporated into the subsequent round, until consensus is reached. In the case of school attendance terminology, participants could include: academics; teachers and school support staff; educational psychologists; psychiatrists, psychologists and other mental health specialists; paediatricians; and professionals in other roles who have experience working with CYP with attendance problems. It has previously been proposed that the broad range of terminology in this field stems from the fact that it is of relevance to, and has been studied by, individuals from a variety of different disciplines including psychology, psychiatry, social work, sociology, education, criminal justice, and politics, and as such a single shared conceptualisation of attendance problems may be difficult to achieve due to the unique goals of these different disciplines (Heyne et al., 2019a; Kearney, 2008a). Nonetheless, a Delphi survey would provide the opportunity to explore where the views of individuals across these disciplines deviate and where they converge, and would perhaps offer the best opportunity to establish consensus.

Although the findings presented in this thesis highlighted a clear association between emotional disorder and school absence, there are a broad range of additional factors that may signify that an individual is at an increased risk of emotional disorder. One method that has the potential to vastly improve the identification of emotional disorders in CYP, particularly in school settings, is a computerised decision support system based on an algorithm that incorporates many of the known risk factors for emotional disorder. Similar systems have been created, tested and even successfully implemented in other areas of medicine, including identification of skin cancer, detection of dementia in primary care, and prediction of cardiovascular risk (Anbarasi et al., 2010; Moore et al., 2018; Weng et al., 2017). The development of such a system for the detection of emotional disorders in school settings would require several stages of work. Firstly, research would need to establish which risk factors are most predictive of emotional disorders in this population. Secondly, the development of an algorithm that incorporates these known risk factors, using data from an initial sample of CYP would need to be undertaken. Thirdly, the algorithm would

need to be validated using data from an independent sample of CYP. Finally, once the algorithm is validated it would need to be packaged into a computerised system suitable for use in schools, and then pilot tested.

7.5 Conclusions

This thesis presented a body of research that adds to the scientific knowledge regarding the association between emotional disorder and school absence in CYP. It has demonstrated, through four studies each adopting a different methodological approach, evidence for a strong relationship between emotional disorder and school absence. The findings consistently demonstrate that depression is more strongly associated with absence than is anxiety, yet secondary school educational practitioners focused almost exclusively on the role of anxiety in contributing to attendance problems, while neglecting other mental health difficulties, including depression. Possible explanations for the particularly strong role of depression in school absence are that the symptoms of depression themselves are more detrimental to school attendance than the symptoms of anxiety; that depression is associated with more pervasive and consistent difficulties compared to the often transient and context-specific symptoms of anxiety; and that rates of psychiatric comorbidity are typically higher for CYP with depression compared to those with anxiety. Clinical and educational professionals should be aware that high rates of school absence could signify that a young person is experiencing emotional difficulties, particularly if those absences are unauthorised. The findings provide support to the idea that education and mental health are not a “zero-sum game”, and that efforts to improve CYP’s emotional health may also improve their attendance at school. Future research should aim to explore the causal pathways between emotional disorder and school absence, as well as evaluating the effectiveness of using attendance data as a component of school-based mental health screening approaches.

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Appendices

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Appendix One: Systematic review protocol paper

Finning *et al. Systematic Reviews* (2017) 6:121
DOI 10.1186/s13643-017-0523-6

Systematic Reviews

PROTOCOL Open Access

The association between child and adolescent emotional disorder and poor attendance at school: a systematic review protocol

Katie Finning[1*], Darren Moore[1], Obioha C. Ukoumunne[1], Emilia Danielsson-Waters[2] and Tamsin Ford[1]

Abstract

Background: Anxiety and depression are common in young people and are associated with a range of adverse outcomes. Research has suggested a relationship between emotional disorder and poor school attendance, and thus poor attendance may serve as a red flag for children at risk of emotional disorder. This systematic review aims to investigate the association between child and adolescent emotional disorder and poor attendance at school.

Methods: We will search electronic databases from a variety of disciplines including medicine, psychology, education and social sciences, as well as sources of grey literature, to identify any quantitative studies that investigate the relationship between emotional disorder and school attendance. Emotional disorder may refer to diagnoses of mood or anxiety disorders using standardised diagnostic measures, or measures of depression, anxiety or "internalising symptoms" using a continuous scale. Definitions for school non-attendance vary, and we aim to include any relevant terminology, including attendance, non-attendance, school refusal, school phobia, absenteeism and truancy. Two independent reviewers will screen identified papers and extract data from included studies. We will assess the risk of bias of included studies using the Newcastle-Ottawa Scale. Random effects meta-analysis will be used to pool quantitative findings when studies use the same measure of association, otherwise a narrative synthesis approach will be used.

Discussion: This systematic review will provide a detailed synthesis of evidence regarding the relationship between childhood emotional disorder and poor attendance at school. Understanding this relationship has the potential to assist in the development of strategies to improve the identification of and intervention for this vulnerable group.

Systematic review registration: PROSPERO CRD42016052961

Keywords: School attendance, Absenteeism, School refusal, Emotional disorder, Anxiety, Depression, Children, Adolescents

Background

Rationale

Emotional disorders are among the most common psychiatric disorders in children and adolescents, with worldwide prevalence estimates of 7 and 3% for anxiety and depressive disorders, respectively [1]. In addition, emotional disorders are identified as leading contributors to the burden of disease in young people [2]. In the short term, emotional disorders are associated with a range of adverse consequences including educational problems, difficulties at home and in social relationships, physical health problems, smoking and substance abuse [3, 4]. In the long term, they are associated with adult psychiatric disorder, substance abuse, increased risk of suicide, increased treatment utilisation and social impairments [5, 6]. Effective interventions for these disorders exist [7], yet rates of help-seeking remain low, with estimates suggesting that approximately 80%

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of children fail to access effective treatment [8, 9]. There is therefore a need to explore how emotional disorders in children and adolescents could be better detected, to allow for provision of appropriate support and intervention. Since the majority of children spend a large proportion of their time at school, teachers and other educational practitioners are well-placed to identify potential emotional disorders in young people. A recent report from the UK Department for Education (DfE) highlights the important role of schools in supporting children to be resilient and mentally healthy, and promotes the use of attendance data as one way of identifying children at risk of mental health problems [10]. In the UK, education is compulsory for all children from the school term immediately following their fifth birthday, and any child absent for 10% or more of school "sessions" (morning or afternoon) is considered "persistently absent" [11].

Traditionally, research has characterised persistent non-attendance at school in two broad categories: *school refusal*, reflecting non-attendance due to emotional distress and *truancy*, reflecting non-attendance due to a lack of interest in school or antisocial behaviour [12]. In practice, however, a broad range of labels are used, including school refusal, truancy, absenteeism, persistent non-attendance and school phobia. These terms are often used interchangeably, and there is little consensus about how best to define and assess the full spectrum of persistent non-attendance. In addition, there is evidence to suggest that school refusal and truancy are not mutually exclusive, leading some researchers to argue that a more inclusive approach is needed that makes no assumptions about the underlying aetiology [13]. Emotional disorder can be conceptualised in different ways but is generally considered to mean depression or anxiety [14]. Some studies examine diagnoses using standardised diagnostic measures, and others measure symptoms of depression or anxiety on a continuous scale. Studies may also refer to "internalising problems" or "internalising symptoms", which are generally considered to mean a combination of depression and anxiety [15].

Studies have shown a relationship between emotional disorder and non-attendance at school. For example, McShane et al [16] found that 54 and 52% of children assessed or treated for school refusal in an Australian clinic had diagnoses of anxiety and mood disorders, respectively, and a large USA community sample found that 25% of anxious school refusers and 88% of mixed school refusers (i.e. those meeting criteria for both anxious school refusal and truancy) met criteria for a psychiatric disorder, compared to 7% of non-school refusers [17]. Somatic symptoms such as headaches, stomach aches and fatigue are commonly reported in children with emotional disorders, and there is some evidence that somatisation may be one of the pathways through which emotional disorders impact on school attendance [18]. Research investigating the relationship between emotional disorder and poor attendance at school has varied extensively in setting, sample sizes, use of comparators and definitions and methods of assessing both attendance and emotional disorder, making comparison between studies difficult, and we are aware of no systematic reviews that have addressed this relationship. Understanding the association between emotional disorder and poor attendance at school has the potential to assist in the development of strategies to improve the identification of and intervention for children with emotional disorder.

Objectives

The objectives of this systematic review are to address the following research questions:

- Is there an association between child and adolescent emotional disorder and poor attendance at school?
- Is this association moderated by between-study characteristics such as age of child, type of emotional disorder, somatic symptoms, measurement source (e.g. child-report, parent-report), assessment method (diagnostic tool or measures of continuous symptoms), study setting or type of school?

Methods

This protocol follows the Preferred Reporting Items for Systematic review and Meta-Analysis Protocols (PRISMA-P) guidelines [19] (see Additional file 1) and is registered on PROSPERO, an international register of systematic reviews [20] (CRD42016052961). Any changes to the protocol will be recorded on PROSPERO.

Eligibility criteria

Population

Participants will be school-aged children and adolescents. Although research into school attendance typically focuses on children aged 5–17 [13], we expect the exact age range to vary between studies, and we will include any age ranges applicable for the country of study. We will exclude retrospective reports collected during adulthood, and studies where the sample is a specific population not comparable to other study samples, for example, those focusing on children with a particular health condition.

Main study variables

We intend to include any study that investigates the relationship between emotional disorder and school attendance. Based on a previous systematic review on a similar topic [21] and an initial scoping search, we

anticipate that studies will vary in the way they investigate the relationship between these variables, with some treating emotional disorder as the exposure and school attendance as the outcome and others considering poor attendance the exposure and emotional disorder the outcome. Emotional disorder must be assessed by diagnosis with a standardised diagnostic measure or by measures of symptoms using a validated scale. This will allow for inclusion of studies reporting on children with a diagnosed emotional disorder, as well as those with higher levels of emotional symptoms compared to their peers. We anticipate that a broad range of methods will be applied to assess and define school attendance and will take an inclusive approach. Methods of assessing attendance can include, but will not be limited to: a quantitative measure of actual attendance, or assessment of attendance behaviours using structured interviews or self-report measures. We will include any terminology used for attendance including, but not restricted to: attendance, non-attendance, school refusal, school phobia, absenteeism and truancy.

Types of studies

Quantitative studies of any design that report on the relationship between emotional disorder and school attendance will be eligible, including population surveys and case-control, cross-sectional, longitudinal and cohort studies. Studies where the primary aim was to evaluate the effectiveness of an intervention will be excluded, as will case studies, case series, editorials or opinion pieces and papers published in languages other than English. No restrictions will be placed on country of study. Publications that do not provide enough information to allow for quality appraisal, for example, conference abstracts, will be excluded.

Information sources

Studies will be identified from the following information sources:

1. Electronic database searching: we will search electronic databases from date of inception to present, as we do not have reason to believe the concepts of emotional disorder or school attendance are likely to have changed substantially over time. The following databases will be searched using a pre-specified search strategy (see 'search strategy'):
   - MEDLINE (via OvidSP), including Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE Daily and Ovid MEDLINE
   - PsycINFO (via OvidSP)
   - Education Resources Information Centre (ERIC) (via EBSCOhost)
   - Applied Social Sciences Index and Abstracts (ASSIA) (via ProQuest)
   - Education Research Complete (via EBSCOhost)
   - British Education Index (via EBSCOhost)
   - Australian Education Index (via ProQuest)
   - ProQuest Dissertations and Theses (PQDT) (via ProQuest)
2. Grey literature: grey literature is usually understood to mean literature that is not formally published in sources such as books or journal articles [22], and its inclusion in a systematic review minimises the impact of publication bias. We will search Health Management Information Consortium (HMIC), Conference Proceedings Citation Index, ProQuest Dissertations and Theses and the website OpenGrey (via http://www.opengrey.eu/), all of which index grey literature.
3. Citation searching: citation lists of included studies will be checked (backward citation searching), as will papers that have cited included studies, according to Web of Science (forward citation searching).
4. Experts in the field: experts in the field and corresponding authors of included papers will be contacted for any further information, such as unpublished material or papers in press.

Search strategy

A comprehensive search strategy has been developed following a scoping review of the topic area and consultation with an information specialist as well as experts in the fields of child mental health and education. The search strategy will include both free-text searching and controlled vocabulary searching (e.g. MEDLINE Medical Subject Headings (MeSH) terms). Terms will be grouped according to four concepts:

- Child terms (e.g. child, adolescent, student, pupil)
- Setting terms (e.g. school, education, nursery)
- Attendance terms (e.g. attendance, non-attendance, refusal)
- Emotional disorder terms (e.g. emotional disorder, anxiety, depression, internalizing)

The master search strategy for MEDLINE (OvidSP) can be found in Additional file 2.

Study records

Selection process

An initial screening of titles and abstracts of identified papers will be performed by two independent reviewers, who will assess each study for relevance according to the pre-specified eligibility criteria. Studies that cannot be conclusively excluded from title and abstract screening will be taken forward to full text screening, at which

stage the full text will be obtained and a second screening process performed, again by two independent reviewers. This will result in a final set of papers to be included in the review. Discrepancies between the two reviewers at any stage will be resolved through discussion and, if required, referral to a third reviewer. The number of studies identified, included and excluded at each stage will be reported using a PRISMA flow diagram [23] together with reasons for exclusion at the full-text stage.

Data management

EndNote X7 software will be used to manage references throughout the review process. The results of searches will be exported to EndNote and duplicates will be removed.

Data extraction

A data extraction form will be developed specifically for the current study, guided by the full-text screening stage and following templates provided by experts in systematic reviewing. The data extraction form will be pilot tested on three studies selected from those to be included in the review. Data extraction will be completed by two independent reviewers for all included studies. Where there are multiple publications from one study, we will treat all sources as one and extract the data into one form. Data items to be extracted will include: study design, age and gender of participants, country of study, sample size, setting, method of assessing emotional disorder, measures of school (non-)attendance and relevant findings including effect sizes, confidence intervals and p values, where provided.

Risk of bias in individual studies

Assessing risk of bias in included studies is important in determining the validity of the results and interpretation of findings. Risk of bias of included studies will be assessed by two independent reviewers using the Newcastle-Ottawa scale (NOS), which is a widely used scale designed for use in epidemiological systematic reviews [24]. The risk of bias for each included study will be taken into consideration during data synthesis.

Data synthesis

Study characteristics will be summarised using means and standard deviations (or medians and interquartile ranges) for continuous variables, and numbers and percentages for categorical variables. A narrative report of study characteristics will also be provided. Where at least two studies have used the same method to analyse the relationship between emotional disorder and school attendance, random effects meta-analysis (using the DerSimonian and Laird method [25]) will be used to pool the quantitative results across studies. The pooled "effect" estimate (e.g. mean difference, standardised mean difference, risk ratio etc) will be reported with 95% confidence interval and p value. Heterogeneity will be quantified using the I-squared statistic, and we will assess the presence of heterogeneity using Cochran's Q test. If there are sufficient data, we will perform subgroup analyses to investigate the effects of the following potential moderator variables on the relationship between emotional disorder and poor school attendance: mean age of children, type of emotional disorder, somatic symptoms, measurement source (e.g. child-report, parent-report), assessment method (diagnostic tool or measures of continuous symptoms), study setting and type of school. If subgroup analyses show statistically significant evidence that two or more of these variables are moderators, and there are at least ten studies per moderator, then we will consider using meta-regression to examine the moderators in a single model. If there are sufficient studies, we will also examine the possibility of publication bias using funnel plots and Egger's regression test [26]. We will use the assessment of risk of bias in individual studies to indicate the strength of the body of evidence for each main outcome variable.

Discussion

This systematic review will provide a detailed synthesis of the evidence base regarding the relationship between emotional disorder in children and adolescents and poor attendance at school. There are a number of studies that have reported on this relationship, but due to the heterogeneity in settings, definitions and methods of assessment, comparison between studies is difficult. Our synthesis will take into account the strengths and limitations of the included studies, as well as any limitations in our own methodology, and we will consider factors that may explain any observed differences between studies. This is the first systematic review of which we are aware to investigate the relationship between child and adolescent emotional disorder and poor attendance at school. Understanding this relationship has the potential to assist in the development of strategies to improve the identification and intervention of this vulnerable group.

Additional files

Additional file 1: PRISMA-P checklist. (DOCX 29 kb)
Additional file 2: Search strategy for MEDLINE. (DOCX 13 kb)

Abbreviations

ASSIA: Applied Social Sciences Index and Abstracts; DfE: Department for Education; ERIC: Education Resources Information Centre; HMIC: Health Management Information Consortium; MeSH: Medical Subject Headings; NOS: Newcastle-Ottawa scale; PQDT: ProQuest Dissertations and Theses; PRISMA: Preferred Reporting Items for Systematic reviews and Meta-Analyses; PRISMA-P: Preferred Reporting Items for Systematic review and Meta-Analysis Protocols.

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Availability of data and materials
Not applicable.

Authors' contributions
KF, TF, DM and OU conceived and designed the systematic review. KF and ED-W performed the screening and data extraction. KF wrote the first draft of the manuscript. All authors revised and approved the final manuscript.

Competing interests
The authors declare that they have no competing interests.

Consent for publication
Not applicable.

Ethics approval and consent to participate
Not applicable.

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Appendix Two: Systematic review – Newcastle Ottawa Scale (NOS) for quality appraisal

Case-Control Studies

Note: A study can be awarded a maximum of one star for each numbered item with the Selection and Exposure categories. A maximum of two stars can be given for Comparability.

Selection (maximum 4 stars)

1. Is the case definition adequate?
    a. Yes, with independent validation *
    b. Yes, e.g. record linkage or based on self-reports
    c. No description
2. Representativeness of the cases
    a. Consecutive or obviously representative series of cases *
    b. Potential for selection biases or not stated
3. Selection of controls
    a. Community controls *
    b. Clinical controls
    c. No description
4. Definition of controls
    a. No history of outcome (NB if cases have new (not necessarily first) occurrence of outcome, controls with previous occurrences should not be excluded) *
    b. No description of source

Comparability (maximum 2 stars)

1. Comparability of cases and controls on the basis of the design or analysis
    a. Study controls for age and gender *
    b. Study controls for any additional factor *

Exposure (maximum 3 stars)

1. Ascertainment of exposure
    a. Secure record *
    b. Structured interview where blind to case/control status *
    c. Interview not blinded to case/control status
    d. Written self-report or medical record only
    e. No description
2. Same method of ascertainment for cases and controls
    a. Yes *
    b. No
3. Non-response rate
    a. Same rate for both groups *
    b. Non respondents described
    c. Rate different and no designation

Longitudinal/Cohort Studies

Selection (maximum 4 stars)

1. Representativeness of the exposed cohort
    a. Truly representative of the average in the target population *
    b. Somewhat representative of the average in the target population *
    c. Selected group of users
    d. No description of the derivation of the cohort
2. Selection of the non-exposed cohort
    a. Drawn from the same community as the exposed cohort *
    b. Drawn from a different source
    c. No description of the derivation of the non-exposed cohort
3. Ascertainment of exposure
    a. Secure record *
    b. Structured interview *
    c. Written self-report
    d. No description
4. Demonstration that outcome of interest was not present at start of study
    a. Yes *
    b. No

Comparability (maximum 2 stars)

1. Comparability of cohorts on the basis of the design or analysis
    a. Study controls for age and gender *
    b. Study controls for any additional factor *

Outcome (maximum 3 stars)

1. Ascertainment of outcome
    a. Independent blind assessment *
    b. Record linkage *
    c. Self-report
    d. No description
2. Was follow-up long enough for outcomes to occur?
    a. Yes *
    b. No
3. Adequacy of follow-up of cohorts
    a. Complete follow-up – all subjects accounted for *
    b. Subjects lost to follow-up unlikely to introduce bias – small number lost *
    c. Follow up rate not adequate and no description of those lost
    d. No statement

Cross-Sectional Studies

Selection (maximum 4 stars)

1. Representativeness of the sample
    a. Truly representative of the average in the target population *
    b. Somewhat representative of the average in the target population *
    c. Selected group of users
    d. No description of the sampling strategy
2. Sample size
    a. Justified and satisfactory *
    b. Not justified
3. Non-respondents
    a. Comparability between respondents and non-respondents characteristics is established, and the response rate is satisfactory *
    b. The response rate is unsatisfactory, or the comparability between respondents and non-respondents is unsatisfactory
    c. No description of the response rate or the characteristics of the responders and non-responders
4. Ascertainment of emotional disorder
    a. Secure record *
    b. Structured interview *
    c. Written self-report
    d. No description

Comparability (maximum 2 stars)

1. The subjects in different outcome groups are comparable, based on the study design or analysis. Confounding factors are controlled
    a. Study controls for age and gender *
    b. Study controls for any additional factor *

Outcome (maximum 2 stars)

1. Assessment of school attendance
    a. Independent blind assessment *
    b. Record linkage *
    c. Self-report
    d. No description
2. Statistical test
    a. The statistical test used to analyse the data is clearly described and appropriate, and the measurement of the association is presented, including confidence intervals and the probability level (p-value) *
    b. The statistical test is not appropriate, not described or incomplete

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Appendix Three: Systematic review of depression and school attendance – Published paper

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Review article

The association between child and adolescent depression and poor attendance at school: A systematic review and meta-analysis

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ABSTRACT

Background: Depression in young people may lead to reduced school attendance through social withdrawal, loss of motivation, sleep disturbance and low energy. We systematically reviewed the evidence for an association between depression and poor school attendance.

Methods: Seven electronic databases were searched for quantitative studies with school-aged children and/or adolescents, reporting a measure of association between depression and school attendance. Articles were independently screened by two reviewers. Synthesis incorporated random-effects meta-analysis and narrative synthesis.

Results: Searches identified 4930 articles. Nineteen studies from eight countries across North America, Europe, and Asia, were included. School attendance was grouped into: 1) absenteeism (i.e. total absences), 2) excused/medical absences, 3) unexcused absences/truancy, and 4) school refusal. Meta-analyses demonstrated small-to-moderate positive cross-sectional associations between depression and absenteeism (correlation coefficient $r = 0.11$, 95% confidence interval 0.07 to 0.15, $p = 0.005$, $I^2 = 63\%$); and depression and unexcused absences/truancy ($r = 0.15$, 95% confidence interval 0.13 to 0.17, $p < 0.001$, $I^2 = 4\%$; odds ratio = 3.74, 95% confidence interval 2.11 to 6.60, $p < 0.001$, $I^2 = 65\%$). Few studies reported associations with school refusal or excused/medical absences, and few utilised longitudinal data, although results from two studies suggested an association between depression and subsequent absenteeism.

Limitations: Study quality was poor overall, and methodological heterogeneity, despite creating a broad evidence-base, restricted meta-analysis to only small subsamples of studies.

Conclusions: Findings suggest associations between depression and poor school attendance, particularly absenteeism and unexcused absences/truancy. Clinicians and school staff should be alert to the possibility of depression in children and adolescents with poor attendance. Future research should utilise longitudinal data to confirm the direction of the association, investigate associations with excused absences, and test potential moderators of the relationship.

1. Introduction

Depression is a leading contributor to the burden of disease in children and adolescents (Gore et al., 2011), and is associated with impairments in school, family and social functioning (Costello et al., 1996; Fergusson and Woodward, 2002; Horowitz and Garber, 2006; Rutter et al., 2006). Depression affects approximately 3% of the school-aged population worldwide, with many more children experiencing subthreshold symptoms (Polanczyk et al., 2015), and there is also evidence from the UK (Fink et al., 2015), and worldwide (Bor et al., 2014), that depression in this population may be on the rise, particularly for adolescent girls Effective interventions include individual- and group-delivered cognitive behavioral therapy, and antidepressant medication (Das et al., 2016; Weisz et al., 2017). However, fewer than 20% of children and adolescents with depression receive treatment, and studies in the UK and the USA have demonstrated that young people with

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Table 1.
Master search strategy for MEDLINE.

#	Keywords	Search terms
1	Children and adolescents	child* or adolescen* or student* or youth* or pupil* or schoolchild* or (young adj (people or person)) or [child] or [adolescent] or [students]
2	School attendance	((school* or kindergarten or nursery or education*) adj4 (attend* or non-attend* or refus* or absen* or school phobi* or truan*))
3	Depression	(emotional adj (disorder* or distress or symptom*)) or depressi* or affect* disorder* or mood disorder* or dysthymi* or bipolar or internalising or internalizing or [mood disorder]
#1 AND #2 AND #3 limit to English language		

NB terms in square brackets refer to MEDLINE Medical Subject Headings (MESH)

internalizing difficulties such as anxiety and depression are less likely to be in contact with mental health services and other support services, compared to young people with other psychiatric disorders such as neurodevelopmental or conduct disorders (Collins et al., 2004; Ford et al., 2007; Merikangas et al., 2010).

Since most children and adolescents spend a large proportion of their time at school, recent reports have called for schools to play a greater role in promoting mental wellbeing, identifying students who may be experiencing mental distress, and referring to specialist services where necessary (Department of Health and Department for Education, 2017; YoungMinds, 2017). The UK Department for Education suggests that attendance data may assist in the identification of students at risk of poor mental health (Department for Education, 2016). There is some evidence to suggest that there may be an association between depression and poor attendance at school. For example, in a large USA community sample, Egger et al. (2003) reported that 14% of school refusers, and 8% of truants, met diagnostic criteria for depression, compared to 2% of controls. Likewise, in a large UK survey, 44% of 5–16 year olds who met diagnostic criteria for a depressive disorder, had at least one unexcused absence in the previous school term, compared to 9% of those with neither depression nor anxiety (Green et al., 2005). Symptoms of depression such as social withdrawal, loss of motivation, sleep disturbance and reduced energy, may impact a child's ability to attend school, but the inactivity and social isolation associated with school non-attendance may also increase a child's risk of depression.

There have been no systematic reviews to date that have examined the association between depression and poor school attendance. In a narrative review of the literature, Kearney (1993) concluded that depression is highly prevalent among youth with poor attendance. However, the studies reported had severe methodological limitations including small, unrepresentative samples, and there had been no longitudinal research at that time. An up-to-date analysis using rigorous systematic review methods would enhance our understanding of the association between depression and school attendance, and would allow findings from individual studies, utilising different methodological approaches, to be brought together, thus allowing for broader conclusions to be made regarding this association. Further insight into the relationship between depression and school attendance has the potential to inform practice. For example, if a relationship is identified, clinicians and educators should be encouraged to consider patterns of school attendance in order to identify young people who may be experiencing mental distress. This study therefore aims to systematically review the evidence for an association between child and adolescent depression and poor attendance at school.

2. Methods

This systematic review and meta-analysis was conducted following guidelines for best practice (Centre for Reviews and Dissemination, 2009), and is reported in accordance with the PRISMA statement (Moher et al., 2009). Searches were performed as part of a broader review that focused on associations between all emotional disorders and poor school attendance (Finning, In preparation). Only those studies reporting depression are included here, because the breadth of studies and concepts from the whole review was considered too extensive to be included in one paper. The protocol was registered on the PROSPERO database (CRD42016052961), and published in a peer-reviewed journal (Finning et al., 2017).

2.1. Eligibility criteria

We searched for quantitative studies from any country, in school-aged children and/or adolescents, which reported the association between depression and school attendance. The age range was expected to vary between studies, and we included any age ranges applicable for the education system of the country of study. Depression had to be ascertained by assessment using a validated scale, diagnosis using a standardised diagnostic measure, or a history of medical diagnosis. Any terminology and method of measuring school attendance was included. Exclusion criteria were: intervention studies, case studies/series, retrospective reports collected in adulthood, studies using samples not comparable to the general population or to other study samples (e.g. children with a particular health condition) and, due to resource constraints, those not published in English.

2.2. Information sources and search strategy

MEDLINE, PsycINFO, Education Resources Information Centre (ERIC), Education Research Complete, British Education Index, Australian Education Index, and Applied Social Sciences Index and Abstracts (ASSIA) were searched by KF from date of *inception* to December 12 2016,. In addition, ProQuest Dissertations and Theses, Health Management Information Consortium, Conference Proceedings Citation Index, and OpenGrey (http://www.opengrey.eu) were searched for grey literature. The search strategy combined child, school attendance and depression terms (see Table 1). Searches were supplemented with forwards and backwards citation chasing via Google Scholar, and contact with experts in the field and lead authors of included studies.

2.3. Study selection and data extraction

KF and EDW independently screened titles and abstracts, followed by full texts, using EndNote X7. Disagreements were resolved through discussion, and referral to TF and DAM where necessary. Data were extracted by KF, and checked by DAM, IRDJ, LSh, or LSt. Items extracted included study details (author, year of publication, country of study, design, primary aim, population), participant characteristics (sample size, age, gender, ethnicity), methods used to assess depression and school attendance (name of measure, informant, measure validation), and study results (effect estimates, confidence intervals, p-values, adjustment for confounding). Authors were contacted wherever possible to clarify unclear data. Where there were multiple publications from one study, all sources were extracted together.

2.4. Assessment of study quality

Quality assessment was conducted alongside data extraction using

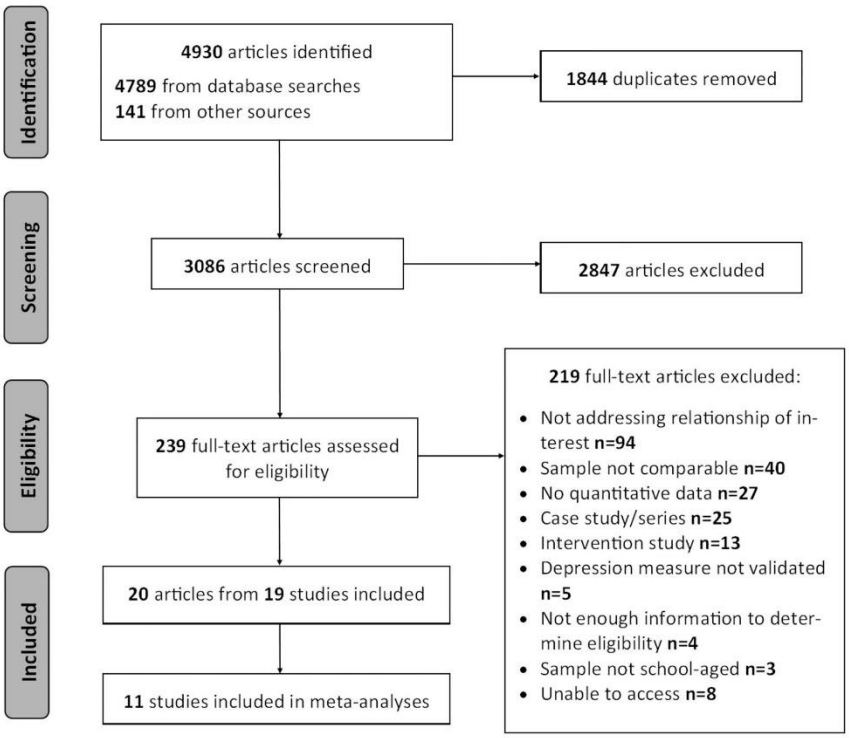

Fig. 1. PRISMA flow diagram showing flow of studies through the review.

the Newcastle-Ottawa Scale (NOS) (Wells, 2008) adapted for use in the current review (see Supplementary Material 1). The NOS is a widely-used scale designed to assess the quality of observational studies, with versions for case-control and cohort studies, and an adaptation for cross-sectional studies (Herzog et al., 2013). Studies are assessed on selection of participants, comparability of participant groups, and assessment of the outcome (for cohort and cross-sectional studies) or exposure (for case-control studies). Stars are awarded for each item where a study is judged to be of high quality, up to a maximum of nine stars for cohort and case-control studies, and eight stars for cross-sectional studies. Study quality was taken into consideration during data synthesis, but was not used to exclude studies.

2.5. Summary measures and data analysis

Summary measures extracted from studies included correlation coefficients (r), where depression and school attendance were reported as continuous variables; standardised mean differences (*d*), where studies reported, for example, mean depression scores for students with good versus poor attendance; and odds ratios (OR), where studies reported depression and school attendance as binary variables. Where this data was not reported by studies, summary statistics, 95% confidence intervals (CI) and p-values were calculated using an online calculator produced by the Campbell Collaboration (Wilson, 2017) or with Stata 14.2 (StataCorp, 2015). Published guidelines guided the interpretation of effect sizes (Chen et al., 2010; Cohen, 1992; Hemphill, 2003).

Where at least two studies investigated the same constructs in comparable populations, and the same summary statistic was reported or calculated (i.e. correlation coefficient, standardised mean difference, odds ratio), random effects meta-analysis was performed in RevMan v5.3 software (The Cochrane Collaboration, 2014), using the DerSimonian and Laird method (DerSimonian and Laird, 1986). The comparability of populations was discussed on a case-by-case basis by KF, TF, OU and DM. Populations did not need to be identical but, for example, a study that sampled children living in the midst of civil conflict (Siriwardhana et al., 2013) was not combined in meta-analyses with other studies. Where individual studies reported multiple results that were relevant to this review (e.g. results from data collected at more than one time-point, or symptoms reported by more than one informant), the one result deemed to be most comparable to other studies was selected for inclusion in meta-analysis, and additional results were synthesised narratively. For example, in the case of studies reporting cross-sectional results at multiple time-points, we meta-analysed the baseline data, as this was considered most comparable to true cross-sectional studies where data were only collected at one time-point. Where studies reported correlations, meta-analysis was performed on Fisher's transformation of the correlation coefficients. Forest plots on the transformed scale were not considered to be helpful for interpretation of results, and so they are not presented in these scenarios, but the back-transformed pooled effect estimate, 95% confidence interval and p-value are reported in the text. Heterogeneity was quantified using the I^2 statistic, which is the percentage of the total variation across study estimates that is due to heterogeneity rather than sampling variation (Higgins et al., 2003).

Meta-analysis was not appropriate in many scenarios due to methodological heterogeneity in terms of the population, setting, school attendance construct, and method of measuring depression and/or school attendance. Results from such studies were synthesised narratively. An effect direction plot was produced to provide a visual summary of results from all studies (Thomson and Thomas, 2013). The protocol for this review stated that subgroup analyses would be

performed, if possible, to investigate the effects of mean age of the child, method of measuring depression (e.g. self-report of continuous symptoms, diagnostic interview), measurement source (e.g. child-report, parent-report), study setting, or type of school, on the relationship between depression and school attendance. However, there were insufficient studies for subgroup analyses to be performed. The protocol also stated that publication bias would be assessed, if possible, using funnel plots and Egger's regression, but again there were insufficient studies to do so (Sterne et al., 2011).

3. Results

3.1. Characteristics of included studies

Searches identified 4930 articles, of which 3086 were title and abstract screened, and 239 full-text screened (see Fig. 1). Twenty articles from nineteen studies were included in the review. Characteristics of included studies are summarised in Table 2. Fourteen were journal articles, five were theses/dissertations, and one was a published report. Despite the large time gap, Newman (2003) and Kingery et al. (2011) were a linked PhD thesis and journal article providing identical results from the same sample. Data from both sources were extracted, but will be referred to throughout this paper as Kingery et al. (2011). Eleven studies were conducted in the USA, two in the UK, one in Canada, and the remainder from five different countries in Europe and Asia. Thirteen studies were cross-sectional in design, two were case-control, and four were longitudinal, with length of follow-up ranging from five months to four years. Sample sizes ranged from 108 to 14,428, with a combined sample size from all studies of 54,325. Studies reported mean ages between 10.4 and 17.2 years, covering children aged from five to 23 years. Two study samples (Bailly et al. 1992; Ingul et al. 2012) included young people in their twenties. Since both of these papers explained that the age range was in keeping with the education system of the country of study (France and Norway), they were eligible for inclusion in the review. The percentage of females ranged from 41% to 71%. Seven samples were predominantly (> 50%) Caucasian, two were predominantly African-American, one was predominantly Hispanic, one was highly mixed, and ethnicity was unreported in the remainder.

Twelve studies reported a continuous measure of depressive symptoms using a validated scale, two created a binary variable by utilising a clinical cut-off on a validated scale, four produced a binary variable using a diagnostic interview, and one study asked participants whether they had ever been given a diagnosis of depression by a medical professional. Full details of the measures used to assess depression can be found in Supplementary Material 2. Studies used a variety of methods to assess school attendance which, due to their complexity, are not discussed here but can be viewed in full in Supplementary Material 3. For the purposes of data synthesis, attendance measures were grouped into four overarching constructs: 1) absenteeism, where studies reported a measure of total absences that did not distinguish between different types or reasons for the absence; 2) excused/medical absences, 3) unexcused absences/truancy, and 4) school refusal, which is typically defined as non-attendance due to anxiety or emotional distress (Kearney, 2008). One study additionally reported a separate analysis for students meeting criteria for both school refusal and truancy ("mixed school refusal and truancy"). Absence categories were mutually exclusive, such that any one result was included in only absence category. Where school attendance terminology used by the study was inconsistent with the assessment method, we used the method, rather than the terminology, to determine our grouping of constructs.

3.2. Results of quality assessment

Table 3 reports the results of quality assessment. Cross-sectional studies were of poor-to-moderate quality, with NOS scores that ranged from zero to six out of eight. Common issues included no justification for sample size, no description of non-respondents, relying on self-reported depressive symptoms, and inappropriate or poorly reported statistics. Longitudinal studies were of poor-to-moderate quality, with NOS scores that ranged from two to five out of nine. All used self-reported depression, most used self-reported school attendance, and none controlled for confounding. The two case-control studies scored one and seven out of nine. Neither reported response rates for cases versus controls. Otherwise, Jones et al. (2009) was methodologically strong, and Honjo et al. (2001) very poor.

3.3. Data synthesis

Table 4 summarises the direction and statistical significance of results from all studies. Synthesis is presented under subheadings related to different school attendance constructs: absenteeism, excused/medical absences, unexcused absences/truancy, and school refusal, with the addition of a fifth subheading "mixed school refusal and truancy", for one study that conducted a separate analysis for students meeting criteria for both types of non-attendance (Egger et al., 2003). Under each subheading, results are first presented for cross-sectional associations. Where data were available, this is followed by findings for longitudinal associations between baseline depression and subsequent school attendance, and/or longitudinal associations between baseline school attendance and subsequent depression. Meta-analysis was possible for sub-samples of studies within the constructs of "absenteeism" and "unexcused absences/truancy". Narrative synthesis is provided for results that could not be included in meta-analyses due to methodological heterogeneity.

3.3.1. Absenteeism

Meta-analysis of four studies reporting correlation coefficients (Juvonen et al., 2000; Kingery et al., 2011; Tsar, 2011; Zadeh, 2010) demonstrated a small positive, cross-sectional association between depressive symptoms and absenteeism (pooled correlation coefficient $r = 0.11$, 95% CI 0.07 to 0.15, $p = 0.005$; $I^2 = 63\%$). Three additional results demonstrated positive associations in unadjusted ($r = 0.15$, 95% CI 0.05 to 0.25, $p = 0.004$ (Kingery et al., 2011); OR = 2.72, 95% CI 1.66 to 4.46, $p < 0.001$ (Puura et al., 1998) and adjusted analyses (regression coefficient = 1.20, $p < 0.001$, i.e. annual absence increased by 1.2 days for each one-point increase on the Child Depression Inventory score, where scores can range from zero to 20 (Zadeh, 2010)). There were positive longitudinal associations between baseline depressive symptoms and absenteeism at six- ($r = 0.13$, 95% CI 0.03 to 0.23, $p = 0.013$, (Kingery et al., 2011)) and twelve-month follow-up (regression coefficients 0.05, $p < 0.01$[1] and 0.10, $p < 0.001$ for middle- and high-school students, respectively, which indicates a 0.05% and 0.10% increase in days absent per 1% increase in depressive symptom score (Wood et al., 2012)). One study reported no association between baseline number of days absent and depressive symptoms six-months later ($r = 0.02$, 95% CI −0.08 to 0.12, $p = 0.703$ (Kingery et al., 2011)), while another reported strong evidence of a positive relationship for middle-school students, but little evidence for high-school students, between baseline absenteeism and depressive symptoms at 12-month follow-up (regression coefficients 0.06, $p < 0.001$ and 0.02, $p > 0.05$, respectively, representing the percentage increase in days absent per 1% increase in depressive symptom score (Wood et al., 2012)). Overall, therefore, the evidence suggested a small, positive, cross-sectional association between depression and absenteeism. There was also evidence from two longitudinal studies that depression may precede absenteeism, but mixed results in terms of absenteeism preceding depression.

[1] Wood et al. (2012) did not report exact p-values and these could not be calculated from data provided in the paper. The authors did not respond to our request for further information.

Table 2.
Summary of study characteristics.

Study	Country	Publication status	Design	Recruitment setting	Sample size (% female)	Age in years*	Ethnicity
Bailly et al. (1992)	France	Journal	CS	15 representative, randomly selected high schools	728 (41%)	17.2 (1.5) 14–23	NR
Burton et al. (2014)	USA	Journal	LO	Two primary care medical clinics, Pennsylvania & Ohio	108 (71%)	16.3 (0.9) T1 14–19 T1	59% African-American
Egger et al. (2003)	USA	Journal	CS	Public schools in 11 counties in North Carolina, taking part in GSMS	1422† (44%)	9–16	70% White
Gase et al. (2014)	USA	Journal	CS	Applications to 1 of 3 high-performing public schools; application open to all youths in catchment area	909 (55%)	16.4	84% Hispanic
Green et al. (2005)	UK	Report	CS	Children and adolescents living in private households in England, Scotland and Wales, sampled via UK Child Benefit Records	7621/4689‡ (48%)	5–16	86% White§
Honjo et al. (2001)	Japan	Journal	CC	Clinical setting implied – no further details	287 (51%)	14.1 7–17	NR
Hunt and Hopko (2009)	USA	Journal	CS	Four high schools in Appalachian mountains	367 (58%)	15.9 (1.4) 14–19	94% Caucasian
Ingul et al. (2012)	Norway	Journal	CS	One urban and one rural high school	809 (52%)	17.2 (1.2) 16–21	NR
Jones et al. (2009)	Scotland	Journal	Nested CC	Ten representative local authority secondary schools in Edinburgh	184 (60%)	15.0 13–16	NR
Juvonen et al. (2000)	USA	Journal	CS	One large public middle school, Los Angeles	178 (55%)	12–15	Mixed§
Kingery et al. (2011)	USA	Journal/ Thesis	LO	Elementary & middle schools from 6 public school districts, New England	365 (52%)	11.2 T1	99% Caucasian
Puura et al. (1998)	Finland	Journal	CS	Representative sample of all children born in Finland in 1981, recruited via sampling at town- and district-level	5686 (49%)	8–9	NR
Repetto (2003)	USA	Thesis	LO	Four public high schools in Flint, Michigan	602 (52%)	14.5 (0.6) T1 14–17 T1	100% African-American
Rosenberg (1987)	USA	Thesis	CS	Two school districts in Ohio	274 (53%)	8–11	NR
Sigfusdottir et al. (2007)	Iceland	Journal	CS	All Icelandic secondary schools in March 2000	5810 (52%)	14–15	NR
Tsar (2011)	Canada	Thesis	CS	50 randomly selected schools in large district school board, Ontario	715 (53%)	10.4 (0.5)	71% Caucasian
Vaughn et al. (2013)	USA	Journal	CS	Representative sample of US youth selected through multistage area probability sampling (NSDUH study)	13,056 (49%)	14.6 (1.7)	59% White
Wood et al. (2012)	USA	Journal	LO	Stratified random sample of all US secondary schools (AddHealth study)	14,428 (50%)	12–18 T1	67% White
Zadeh (2010)	USA	Thesis	CS	Students from 10 locations across US, taking part in NICHD SECCYD study	776 (51%)	11–12	NR

CC – Case-control; CS – Cross-sectional; GSMS – Great Smoky Mountains Study; LO – Longitudinal; N – no; NICHD SECCYD – National Institute of Child Health and Human Development Study of Early Child Care and Youth Development; NR – not reported; NSDUH – National Survey on Drug Use and Health; T1 = time-point one; Y – yes.

* Age reported here as mean (standard deviation) and/or range, as provided by included studies.

† Egger et al. (2003) aggregated data from multiple time waves and thus analysed 6676 observations from 1422 participants.

‡ Green et al. (2005) had total sample of 7977, of which school attendance data available for 7621 and 4689 using parent- and teacher-reports, respectively; gender and ethnicity distribution refers to entire 7977 sample.

§ Juvonen et al. (2000) sample ethnicity was 23% Chicano/Latino, 18% African-American, 16% Middle Eastern, 13% European American, 12% Asian American, 11% Multiracial/other.

Table 3
Results of quality assessment.

Cross-sectional studies	Selection Representative-ness	Sample size	Non-respondents	Ascertainment of emotional disorder	Comparability Comparability	Outcome Assessment of school attendance	Statistical test	Total (out of 8)
Rosenberg (1987)	–	–	–	–	–	–	–	0
Puura et al. (1998)	+	–	–	–	–	–	–	1
Sigfusdottir et al. (2007)	+	–	–	–	–	–	–	1
Bailly et al. (1992)	+	–	–	+	–	–	–	2
Juvonen et al. (2000)	+	–	–	–	–	+	–	2
Tsar (2011)	+	–	–	–	–	+	–	2
Zadeh (2010)	+	+	–	–	–	+	–	3
Ingul et al. (2012)	+	–	+	–	–	+	–	3
Green et al. (2005)	+	–	–	+	++	–	–	4
Hunt & Hopko (2009)	+	–	–	–	++	+	–	4
Vaughn et al. (2013)	+	–	–	–	++	–	+	4
Gase et al. (2014)	+	–	–	–	++	–	+	4
Egger et al. (2003)	+	–	–	+	++	+	+	6

Longitudinal studies	Selection Representativeness of exposed	Selection of non-exposed	Ascertainment of exposure	Outcome not present at start	Comparability Comparability	Outcome Ascertainment of outcome	Length of follow-up	Adequacy of follow-up	Total (out of 9)
Burton et al. (2014)	–	+	–	–	–	–	+	–	2
Repetto (2003)	–	+	–	–	–	–	+	+	3
Wood et al. (2012)	+	+	–	–	–	–	+	–	3
Kingery et al. (2011)	+	+	–	–	–	+	+	+	5

Case-control studies	Selection Definition of cases	Representative-ness of cases	Selection of controls	Definition of controls	Comparability Comparability	Exposure Ascertainment of exposure	Same method of ascertainment	Non-response rate	Total (out of 9)
Honjo et al.(2001)	–	–	–	–	–	–	+	–	1
Jones et al. (2009)	+	+	+	+	++	–	+	–	7

+ One star awarded as per the Newcastle-Ottawa Scale (NOS);
++ two stars awarded;
– no stars awarded. A higher score reflects greater study quality (i.e. lower risk of bias).

Table 4
Effect direction plot showing associations between depression and school attendance for all included studies.

Study	Design	Study quality	Sample size	Depression measurement type	School attendance construct				
					Absenteeism	Excused or medical absences	Unexcused absences or truancy	School refusal	Mixed refusal & truancy
Cross-sectional associations between depression and school attendance									
Honjo et al. (2001)	CC	1/9	287	Continuous				◀	
Hunt & Hopko (2009)	CS	4/8	367	Continuous			◀	◀	
Ingul et al. (2012)	CS	3/8	809	Continuous			◀		
Juvonen et al. (2000)	CS	2/8	178	Continuous	◀				
Kingery et al. (2011)	LO*	5/8	365	Continuous	○				
Repetto (2003)	LO*	3/8	602	Continuous			◀		
Rosenberg (1987)	CS	0/8	274	Continuous		○			
Sigfusdottir et al. (2007)	CS	1/8	5810	Continuous			◀		
Tsar (2011)	CS	2/8	715	Continuous	◀				
Zadeh (2010)	CS	3/8	776	Continuous	◀				
Puura et al. (1998)	CS	1/8	5686	Cut-off	△		○		
Bailly et al. (1992)	CS	2/8	728	Diagnostic			▽		
Egger et al. (2003)	CS	6/8	1422	Diagnostic			◀	◀	○
Gase et al. (2014)	CS	4/8	909	Diagnostic			◀		
Green et al. (2005)	CS	4/8	4689	Diagnostic			◀		
Jones et al. (2009)	Nested CC	7/9	184	Diagnostic		◀			
Vaughn et al. (2013)	CS	4/8	13,056	Other			◀		
Longitudinal associations between depression and subsequent school attendance									
Burton et al. (2014)	LO	2/9	108	Continuous		△	◀		
Kingery et al. (2011)	LO	5/9	365	Continuous	◀				
Repetto (2003)	LO	3/9	602	Continuous			△		
Wood et al. (2012)	LO	3/9	14,428	Continuous	◀				
Longitudinal associations between school attendance and subsequent depression									
Kingery et al. (2011)	LO	5/9	365	Continuous	△				
Repetto (2003)	LO	3/9	602	Continuous			△		
Wood et al. (2012)	LO	3/9	14,428	Continuous	△				

NB where studies reported multiple outcomes: if at least 70% same direction & significance – reported as one effect; less than 70% in same direction – reported as conflicting results; same direction and at least 70% statistically significant – reported as significant; same direction but less than 70% significant – reported as not significant.

◀ = ◀ = positive association ($p < 0.05$);
△ = △ = positive association ($p \geq 0.05$);
◁ = ◁ = no association – Bailly 1992 simply reported "no association", with no accompanying statistics;
○ = ○ = conflicting results. CC = case-control; CS = cross-sectional; LO = longitudinal.
* Kingery 2011 and Repetto 2003 were longitudinal studies but results referred to here are based on cross-sectional data.

3.3.2. Excused/medical absences

One study found increased odds of depression in students who missed at least 20% of school days for medical reasons, compared to controls with good attendance (best 10% of the year group) (OR = 2.62, 95% CI 1.23 to 5.59, $p = 0.011$ (Jones et al., 2009)). Another study found no association between medical absences and child-, teacher- or peer-reported depressive symptom scores ($r = -0.04$, 95% CI −0.16 to 0.08, $p = 0.510$; $r = -0.00$, 95% CI −0.12 to 0.11, $p = 1.000$; and $r = 0.06$, 95% CI −0.06 to 0.18, $p = 0.322$, respectively), although this study was of poor methodological quality (see Table 3) (Rosenberg, 1987). In terms of longitudinal evidence, one study reported only weak evidence of a correlation between baseline depressive symptom score and number of excused absences six-months later ($r = 0.17$, 95% CI −0.02 to 0.35, $p = 0.079$ (Burton et al., 2014)). Overall, therefore, there were mixed findings from the small number of studies available that explored the association between depression and excused/medical absences, although the study of highest quality reported the strongest cross-sectional association.

3.3.3. Unexcused absences/truancy

Meta-analysis of three studies reporting correlation coefficients (Hunt and Hopko, 2009; Repetto, 2003; Sigfusdottir et al., 2007), found a small positive cross-sectional association between depressive symptoms and unexcused absences/truancy (pooled $r = 0.15$, 95% CI 0.13 to 0.17, $p < 0.001$; $I^2 = 4\%$). One study reported further cross-sectional associations at one- ($r = 0.12$, 95% CI 0.04 to 0.19, $p = 0.003$), two- ($r = 0.12$, 95% CI 0.04 to 0.20, $p = 0.003$), and three- ($r = 0.14$, 95% CI 0.06 to 0.22, $p < 0.001$) year follow-up (Repetto, 2003). Ingul et al. (2012) reported greater depressive symptoms in students with "high" versus "no" (standardised mean difference $d = 0.65$, 95% CI 0.40 to 0.89, $p < 0.001$) and "high" versus "normal" ($d = 0.41$, 95% CI 0.20 to 0.63, $p = 0.004$) unexcused absences, and Hunt and Hopko (2009) found a positive association in a multiple linear regression controlling for other predictor variables (regression coefficient = 0.26, $p = 0.002$, i.e. unexcused absences increased by 0.26 days per one-point increase on the Youth Self-Report internalizing scale, where YSR scores can range from zero to 64). A second meta-analysis of four studies reporting odds ratios for depression measured as a binary variable, found a positive cross-sectional association (pooled OR = 3.74, 95% CI 2.11 to 6.60, $p < 0.001$; $I^2 = 65\%$; see Fig. 2), with Green et al. (2005) reporting a larger association than the other studies. One explanation for this is that the studies used different definitions for truancy, with Green et al. (2005) using a lower threshold that only required students to have had one unexcused absence in the previous term in order to be considered a truant. . Several other results, which could not be included in the meta-analysis, are synthesised narratively below.

In addition to parent-reported truancy (see Fig. 2), Puura et al. (1998) demonstrated a small association between teacher-reported truancy and 8–9 year old child-reported depression (OR = 2.54, 95% CI 1.43 to 4.49, $p = 0.001$), but neither result remained statistically significant when all other significant questionnaire items were controlled for. In addition to the analysis adjusting for age, gender and other types of school non-attendance (see Fig. 2), Egger et al. (2003) reported a small positive association when additionally adjusting for psychiatric comorbidity (OR = 2.6, 95% CI 1.2 to 5.6, $p = 0.010$). Gase et al. (2014) found a small positive association for students with "mild depression" (OR = 1.64, 95% CI 1.28 to 2.10, $p = 0.001$) in addition to the association for "severe depression" shown in Fig. 2, and Vaughn et al. (2013) reported evidence of positive associations between a lifetime diagnosis of depression and moderate (OR = 1.43, 95% CI 1.04 to 1.98, $p = 0.029$) and high (OR = 3.41, 95% CI 2.07 to 5.60, $p < 0.001$) truancy, although when adjusting for lifetime anxiety, the association only remained statistically significant for high truancy. Bailly et al. (1992) reported "no correlation" but provided no accompanying statistics.

In terms of longitudinal evidence, one study reported a positive correlation between baseline depressive symptom score and number of unexcused absences six-months later ($r = 0.32$, 95% CI 0.14 to 0.48, $p < 0.001$ (Burton et al., 2014)). Repetto (2003) however, reported small and mostly non-statistically significant correlations between depressive symptom score and subsequent school skipping over three years, as well as little evidence for associations between baseline school skipping and subsequent depressive symptoms.

Overall, therefore, the evidence suggested a small-to-moderate, positive, cross-sectional association between depression and unexcused absences/truancy, which remained when important theoretical confounders such as age, gender, ethnicity, and psychiatric comorbidity were adjusted for. There was limited evidence from only a small number of studies regarding longitudinal associations. The evidence for associations between depression and unexcused absences/truancy was derived from studies of poor methodological quality (see Table 3).

3.3.4. School refusal

One study demonstrated greater self-reported depressive symptoms in school refusers compared to controls ($d = 0.54$, 95% CI 0.22 to 0.87, $p = 0.001$ (Honjo et al., 2001)) and another reported large associations between school refusal and depression assessed via diagnostic interview, when adjusting for age, gender, and other types of absence (OR = 10.0, 95% CI 4.1 to 26.0, $p < 0.001$) and when additionally adjusting for psychiatric comorbidity (OR = 13.0, 95% CI 3.4 to 42.0, $p < 0.001$ (Egger et al., 2003)). Overall, therefore, the evidence suggested a medium-to-large, positive, cross-sectional association between depression and school refusal, which remained after adjusting for confounds. There were no studies reporting longitudinal relationships between these variables.

3.3.5. Mixed school refusal and truancy

One study reported a large positive cross-sectional association between depression and mixed school refusal/truancy when adjusting for age, gender and other types of absence (OR = 8.5, 95% CI 3.1 to 23.0, $p < 0.001$), but this did not remain when additionally adjusting for psychiatric comorbidity (OR = 0.8, 95% CI 0.2 to 2.7, $p = 0.700$ (Egger et al., 2003)).

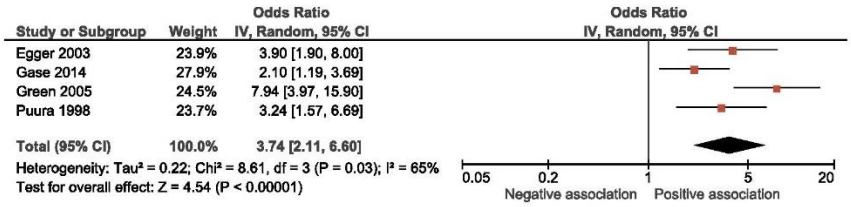

Fig. 2. Forest plot showing odds ratios for the association between depression and unexcused absences/truancy, for those studies where meta-analysis was deemed appropriate.

4. Discussion

This systematic review presented and synthesised findings from 19 studies, and provided an overview of the association between depression in children and adolescents, and poor attendance at school. Results were grouped into four school attendance constructs: absenteeism, excused/medical absences, unexcused absences/truancy, and school refusal. Overall, the evidence suggests a small positive association between depression and absenteeism, and between depression and unexcused absences/truancy; and a moderate-to-large positive association between depression and school refusal. Only two studies reported associations between depression and excused/medical absences, and findings from these two studies were mixed, which limits our ability to draw conclusions in this regard. Few studies utilised longitudinal data, and hence we can only draw tentative conclusions regarding the potential direction of these relationships. However, two studies provided evidence that depression may precede absenteeism, rather than the reverse.

4.1. Strengths and limitations

A variety of terms and methods to assess school attendance exist in the literature, and our grouping of constructs enabled results from multiple studies to be synthesised, and allowed for clearer and broader conclusions to be made than is possible from individual studies. We followed best practice guidelines for conducting (Centre for Reviews and Dissemination, 2009) and reporting (Moher et al., 2009) systematic reviews. Searches did not restrict by date or country, and depression had to be assessed with a validated scale or diagnostic measure. Inclusion criteria for school attendance were broad, which resulted in conceptual breadth. Grey literature was included, and database searches were supplemented with additional strategies to minimise the likelihood of missing studies. Screening was completed independently by two reviewers, and data extraction and quality assessment completed by one reviewer and double-checked by a second, thus minimising bias and error.

However, this review also had limitations. Due to methodological heterogeneity between studies in terms of the population, setting, school attendance construct, and method of measuring depression and/or school attendance, meta-analysis was only possible for sub-samples of studies, with the majority of results synthesised narratively. For each meta-analysis the number of included studies was small, which results in less certain summary estimates and a limited representation of potential between-study variance, compared to meta-analyses with a greater number of included studies (Borenstein et al., 2009). There were insufficient studies to examine publication bias, and it is possible that such bias was present in this review, although the searches included strategies to minimise this. Included studies were from eight countries across North America, Europe and Asia, and it is possible that respondents from different countries understand depression differently. There were insufficient data to perform sensitivity analyses in this respect, but since all countries were high-income, and given the requirement for the use of a validated scale or diagnostic measure, we would not anticipate substantial differences between countries. The exclusion of papers not published in English is also a limitation of this review, and as this was a criterion of database searches, we do not know how many non-English studies would have otherwise met inclusion criteria. The quality assessment tool (NOS) benefits from having versions available for all study designs relevant to this review, however the NOS required adaptation in order to allow direct comparison between studies of different designs, and this limits comparability with other reviews.

There were common limitations observed across included studies. Many did not adjust for confounding factors, which is an important limitation given that several factors have previously been demonstrated to be associated with both depression and school attendance, such as the child's age and socioeconomic status (Department for Education, 2018; Green et al., 2005). Furthermore, some of the studies that did control for confounders reported statistically significant associations only in unadjusted analyses. Most studies measured depressive symptoms with questionnaires, which is judged by the Newcastle-Ottawa Scale as a sign of lower study quality compared to those that use diagnostic assessments. However, given the internalizing nature of depression it could be argued that validated self-report measures are not in themselves a sign of low study quality. Results were often poorly reported, rarely including effect estimates, confidence intervals, and exact p-values.

4.2. Implications

Overall, the evidence suggests that depression is associated with poor attendance at school, and in the few studies to explore temporal relationships, depression preceded poor attendance. Poor school attendance, particularly when it is a change from previous patterns of behaviour, may therefore form part of the clinical picture of a child presenting with depression, and clinicians should be encouraged to question children, and the adults around them, about patterns of school attendance. Likewise, teachers and other school staff should be educated to recognise that poor school attendance may be a sign of depression, and should therefore be alert to changing patterns of attendance in order to help identify students with additional mental health needs, and to signpost to appropriate support services within or beyond the school setting.

The association between depression and unexcused absences/truancy is surprising, since there is a long-held belief that while “school refusal” is associated with emotional disorder, “truancy” is associated with behavioural, but not emotional disorders (Berg et al., 1993; Elliott and Place, 2017; Thambirajah et al., 2008). Given that studies reporting on truancy or unexcused absences rarely assessed or excluded “school refusers” from their sample, it is possible that the association between depression and truancy is in fact a result of unidentified school refusal cases. However, Egger et al. (2003) did separate these constructs and still reported an association between depression and truancy. Additionally, Egger et al (2003) reported a community prevalence of 0.5% mixed school refusal and truancy (compared to 1.6% pure school refusal and 5.8% pure truancy), and we therefore consider it highly unlikely that the association between depression and truancy is entirely due to unidentified cases of school refusal. Altogether, the findings presented here demonstrate that different patterns of non-attendance are associated with depression.

Since the strength of associations reported by individual studies included in this review were variable, future research should investigate moderators of the association between depression and poor school attendance. It may be that there are particular circumstances under which poor school attendance is a particularly robust signifier of depression, and this would have implications for clinicians and school staff. In particular, since depression is rare in young children and becomes more common during adolescence (Ford et al., 2003), it would be beneficial for future research to elucidate the impact of age on the relationship between depression and poor school attendance. There is a lack of evidence regarding associations between depression and excused or medical absences. Since the majority of school absences are excused/authorised (Department for Education, 2018; Kearney, 2008), this warrants further research. Somatic symptoms such as headaches, stomach-aches and fatigue are common in children and adolescents with depression, and these absences may be authorised by the school, particularly if interpreted by adults as signs of physical illness rather than psychological distress.

The majority of studies included in this systematic review used questionnaires to measure symptoms of depression as perceived by children, parents, teachers and/or peers, with few studies utilising diagnostic measures. The benefit of such an approach is that it allows

investigation of the entire spectrum of depressive symptoms, rather than focusing solely on children with diagnosable disorders. However, given that diagnostic frameworks play a key role in policy and service provision, it would be helpful for future studies to use diagnostic criteria instead of, or in addition to, measures of symptoms. Finally, few studies have utilised longitudinal data, and further research in this respect would allow conclusions to be made about the direction of the association, which could theoretically be bi-directional. This has important implications for practice because, for example, if depression precedes poor school attendance, then changes in school attendance might help parents and school staff to identify young people with additional mental health needs, allowing for more timely recognition of mental distress and more prompt referral to specialist mental health services. Alternatively, if poor school attendance precedes depression, it may suggest a need for additional, preventative mental health support to be provided for children who frequently miss school, for example those with physical health conditions.

Conclusion

This systematic review provides evidence for an association between depression and poor attendance at school, particularly absenteeism, unexcused absences/truancy, and school refusal. However, there is a lack of high-quality research, few longitudinal studies, and limited data regarding the most common type of school absence: excused absence.

Contributors

KF, TF, OCU and DAM proposed the idea for the systematic review and developed the protocol. KF conducted searches, screened studies, extracted data, performed quality assessment, synthesised results, and produced the first draft of the report. EDW performed second screening of all identified studies. DAM, LSh, IRDJ and LSt double-checked data extraction and quality assessment. OCU provided statistical advice. All authors contributed to preparation of the manuscript and approved the final article.

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Conflict of interests

None.

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.jad.2018.11.055.

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Appendix Four: Systematic review of anxiety and school attendance – Published paper

Child and Adolescent Mental Health

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Review: The association between anxiety and poor attendance at school – a systematic review

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Background: Anxiety may be associated with poor attendance at school, which can lead to a range of adverse outcomes. We systematically reviewed the evidence for an association between anxiety and poor school attendance. **Methods:** Seven electronic databases were searched for quantitative studies that reported an estimate of association between anxiety and school attendance. Anxiety had to be assessed via standardised diagnostic measure or validated scale. Articles were screened independently by two reviewers. Meta-analyses were performed where possible, otherwise results were synthesised narratively. **Results:** A total of 4930 articles were screened. Eleven studies from six countries across North America, Europe and Asia, were included. School attendance was categorised into: (a) absenteeism (i.e. total absences), (b) excused/medical absences, (c) unexcused absences/truancy and (d) school refusal. Findings from eight studies suggested associations between truancy and any anxiety disorder, as well as social and generalised anxiety. Results also suggested cross-sectional associations between school refusal and separation, generalised and social anxiety disorders, as well as simple phobia. Few studies investigated associations with absenteeism or excused/medical absences. **Conclusions:** Findings suggest associations between anxiety and unexcused absences/truancy, and school refusal. Clinicians should consider the possibility of anxiety in children and adolescents with poor attendance. However, there is a lack of high quality evidence, little longitudinal research and limited evidence relating to overall absenteeism or excused/medical absences, despite the latter being the most common type of absence. These gaps should be a key priority for future research.

Key Practitioner Message

- Anxiety may be associated with poor attendance at school, which can lead to a range of adverse academic, social and economic outcomes.
- This systematic review found evidence for cross-sectional associations between unexcused absences/truancy and any anxiety, as well as social anxiety and generalised anxiety, specifically.
- Evidence was also found for a cross-sectional association between school refusal and separation anxiety, generalised anxiety, social anxiety and simple phobia.
- Clinicians should consider the possibility of anxiety in children and adolescents with poor school attendance.
- There is a lack of high quality evidence, little longitudinal research and limited evidence relating to associations between anxiety and overall absenteeism, or excused/medical absences, despite the latter being the most common type of absence. Further research is required to address these gaps.

Keywords: Anxiety; School attendance; School refusal; Truancy; Epidemiology

Introduction

School plays a key role in children's academic, emotional and social development. Frequent absence from school is a risk factor for poor academic outcomes (Credé, Roch, & Kieszczynka, 2010), social isolation (Kearney, Pursell, & Alvarez, 2001), economic deprivation (Kearney, 2008b) and future unemployment (Attwood & Croll, 2014). In the United Kingdom, 56.7 million school days were missed in 2016/2017 due to pupil absence, and 10.8% of children were deemed 'persistently absent' as a result of missing 10% or more of school sessions in that academic year (Department for Education, 2018). There are many reasons why a child might be absent from school, and a range of personal, familial, school and community influences are risk factors (Egger, Costello,

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& Angold, 2003; Kearney & Albano, 2004; Kearney & Silverman, 1995; Malcolm, Wilson, Davidson, & Kirk, 2003).

Several studies have demonstrated that poor mental health is associated with reduced school attendance, with anxiety described in the literature as a particular risk factor (Egger et al., 2003; Elliott & Place, 2009; Kearney, 2008b). There are many facets of the school setting that have the potential to evoke anxiety, including separation from primary caregivers, social interaction with school staff and peers and academic stress, all of which may lead to avoidance of school by way of negative reinforcement (Kearney, 2008b). Somatic symptoms such as headaches, stomach aches and fatigue are also common among children with anxiety (Campo, 2012), and may contribute to school absence, particularly if interpreted by adults around the child as signs of physical, as opposed to mental ill health. Anxiety is commonly considered to be related to 'school refusal', rather than other types of absence such as truancy or absenteeism in general (Elliott & Place, 2009; Kearney, 2008b; Pellegrini, 2007). Indeed, 'school refusal' is a term used to describe absence due to anxiety or emotional distress, in contrast with 'truancy', which is often used to describe absence associated with antisocial behaviour (King & Bernstein, 2001). However, evidence suggests that there is substantial overlap between 'school refusal' and 'truancy', with many school refusers displaying signs of behavioural disorder, and many truants experiencing emotional distress (Egger et al., 2003). This has led several scholars to promote the use of broader terminologies such as 'problematic absenteeism' (Kearney, 2008a) or 'extended non-attendance' (Pellegrini, 2007), which avoid assumptions about the underlying aetiology of the problem. However, others argue that co-occurrence of school refusal and truancy is rare and that these subcategories are valuable for understanding individual differences in the presentation of attendance problems (Heyne, Gren-Landell, Melvin, & Gentle-Genitty, 2018), and debate continues regarding the utility of various different definitions.

The diversity of terminology used among researchers is a central challenge to the study of school attendance, and there is a lack of consensus about how best to define, measure and address poor attendance (Kearney, 2008b; Lauchlan, 2003; Pellegrini, 2007). Terminology has important implications, because evidence suggests that anxiety-related school refusal is viewed more sympathetically by school staff than is truancy (Finning et al., 2017; Torrens Armstrong, McCormack Brown, Brindley, Coreil, & McDermott, 2011). These views can result in disparate attitudes towards children who are frequently absent from school, and can influence their access to intervention or support, as well as the type of intervention provided, with an emphasis placed on therapeutic interventions for anxious school refusers, and punitive approaches for truants (Finning et al., 2017; Lyon & Cotler, 2007; Torrens Armstrong et al., 2011).

To date there have been no systematic reviews to investigate the relationship between anxiety and school attendance. Given the frequent emphasis in the literature on the presumed role of anxiety in poor attendance, the current study aims to systematically review the evidence regarding the association between anxiety and poor school attendance. Although anxiety is commonly comorbid with depression, much of the literature in relation to school attendance has separated these two constructs. Therefore, this paper focuses on associations between anxiety and school attendance, and findings for associations with depression and internalising problems (i.e. combined symptoms of anxiety and depression) are reported elsewhere (Finning, In preparation; Finning et al., 2019). Understanding the role of anxiety in relation to poor school attendance is important in order that children with anxiety can be identified quickly, and appropriate interventions implemented.

Methods

This systematic review was conducted and reported in line with best practice guidelines (Centre for Reviews and Dissemination, 2009; Moher, Liberati, Tetzlaff, & Altman, 2009). Searches were conducted as part of a broader review that reported associations between school attendance and all emotional disorders (anxiety, depression, internalising difficulties) (Finning, In preparation; Finning et al., 2019). In order to explore the impact of anxiety in sufficient depth, only studies that investigated anxiety are included in the current paper, but we acknowledge that anxiety is commonly comorbid with depression. The protocol was registered on the PROSPERO database (CRD42016052961) and published in a peer-reviewed journal (Finning et al., 2017).

Eligibility criteria

We searched for quantitative studies of any design, from any country, where the sample was school-aged children and/or adolescents, which reported the association between anxiety and school attendance. Studies were eligible if the age range of the sample was applicable for the education system of the country of study. Given that both anxiety disorders and subclinical symptoms of anxiety have the potential to negatively impact a young person's education, studies were eligible if they used measures of anxiety symptoms using a validated scale, diagnosis using a standardised diagnostic measure or a history of medical diagnosis. We included any terminology and any method of measuring school attendance. Exclusion criteria were: case studies/series, retrospective reports collected in adulthood, studies where the sample was not considered comparable to the general population (e.g. children with a specific health condition) and those not published in English. Intervention studies were also excluded because it was considered that the samples would be selective, and that the intervention might impact the association of interest to this review.

Information sources and search strategy

We searched MEDLINE, PsychINFO, Education Resources Information Centre (ERIC), Education Research Complete, British Education Index, Australian Education Index and Applied Social Sciences Index and Abstracts (ASSIA), from date of inception to 12 December 2016. ProQuest Dissertations and Theses, Health Management Information Consortium, Conference Proceedings Citation Index and OpenGrey (http://opengrey.eu) were searched for grey literature. The search strategy combined child, school attendance and anxiety terms (see Supporting Information for full search strategy). In addition, forward and backward citation chasing was performed using Google Scholar, and lead authors of included studies and experts in the field were contacted for additional sources.

Study selection and data extraction

KF and EDW independently screened titles and abstracts, and then full texts, using EndNote X7. Disagreements were

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resolved through discussion and, if necessary, referral to TF and DAM. Twenty papers (0.6%) were referred at the stage of title and abstract screening, and nine (3.8%) at full text screening. The following items were extracted from included studies by KF and checked by DAM, IRDJ, LSh or LSt: study details (author, year of publication, country, design, primary aim, population), participant characteristics (sample size, age, gender, ethnicity), methods used to assess anxiety and school attendance (name of measure, validation, informant) and study results (effect estimates, 95% confidence intervals, *p*-values, adjustment for confounding). Where necessary and possible, study authors were contacted to clarify unclear data (n = 3 studies).

Assessment of study quality

The Newcastle-Ottawa Scale (NOS) (Wells et al., 2008), adapted for the current review, was used to assess the quality of included studies. The NOS is a widely used measure designed to assess the quality of observational studies. There are published versions for case–control and cohort studies, as well as a recent adaptation for cross-sectional studies (Herzog et al., 2013). The NOS evaluates studies on the selection of participants, comparability of participant groups and assessment of the outcome for cohort and cross-sectional studies, or assessment of the exposure for case–control studies. A star-rating system is used to indicate the overall quality of studies, with a maximum of nine stars for cohort and case–control studies, and eight for cross-sectional studies.

Data analysis

Effect sizes included correlation coefficients (r), standardised mean differences (Cohen's d) and odds ratios (ORs). Some studies did not report effect sizes, and in these instances we used an online calculator published by the Campbell Collaboration (Wilson, 2017) or Stata 14.2 (StataCorp, 2015) to calculate effect sizes, 95% confidence intervals and *p*-values. Published guidelines were used to aid the interpretation of effect sizes (Chen, Cohen, & Chen, 2010; Cohen, 1992; Hemphill, 2003).

Where two or more studies investigated the same constructs in comparable populations, and reported the same type of effect size (correlation coefficient, standardised mean difference, or odds ratio), random effects meta-analysis was performed using the DerSimonian and Laird method (DerSimonian & Laird, 1986), in RevMan v5.3 (The Cochrane Collaboration, 2014). The *I*-squared (I^2) statistic was used to quantify heterogeneity; this is the percentage of the total variation across estimates that is due to heterogeneity as opposed to sampling variation (Higgins, Thompson, Deeks, & Altman, 2003). Some studies reported multiple results that were applicable to this review. For example, one study reported results for the same association using both correlation and multiple linear regression (Hunt & Hopko, 2009), and other studies reported both adjusted and unadjusted results (e.g. Vaughn, Maynard, Salas-Wright, Perron, & Abdon, 2013). In these cases, for the purpose of meta-analysis we selected the one result considered most comparable to other studies, and additional results were synthesised narratively. Analyses that adjusted for variables likely to be on the causal pathway between anxiety and school absence (e.g. psychiatric comorbidity), were not included in meta-analyses due to the potential for bias (Schisterman, Cole, & Platt, 2009). Results that could not be included in meta-analyses due to heterogeneity, were synthesised narratively. An effect direction plot was used to provide a visual display of findings from all studies (Thomson & Thomas, 2013).

Our protocol specified that subgroup analyses would be performed to explore the impact of age, anxiety measurement method, informant, setting or school type, on the association between anxiety and school attendance, but this was not possible due to methodological heterogeneity. The protocol also specified that funnel plots and Egger's test would be used to assess publication bias, but there were too few studies for this (Sterne et al., 2011).

Results

Searches identified 4930 articles, of which 3086 were title and abstract screened, and 239 full-text screened (see Figure 1). Eleven studies were included.

Study characteristics

Study characteristics are summarised in Table 1. Studies were conducted in six countries across North America, Europe and Asia. Sample sizes ranged from 54 to 13,056, with a combined sample size of 25,724 from all studies. The combined mean age across all studies was 14.62 years, covering children aged from 5 to 21 years. Two studies included young people in their 20s, but since both explained that this age range was typical of the education system in their respective countries (Norway and Germany), they were included. Anxiety was assessed by measuring continuous symptoms with a validated scale (n = 6), binary classification using diagnostic interviews (n = 4), history of medical diagnosis (n = 1) and screening questions from a diagnostic interview (n = 1); see Supporting Information for further details. Studies used a variety of methods to assess school attendance (see Supporting Information), which, for the purposes of data synthesis, were grouped into four categories that were mutually exclusive (i.e. each result was included in only one category). These categories were: absenteeism (i.e. absence for any reason; n = 1), excused/medical absences (n = 2), unexcused absences/truancy (n = 8) and school refusal (n = 2). One study additionally reported a separate analysis for students meeting criteria for school refusal and truancy ('mixed school refusal and truancy'). Although there was variations in the ways in which each study measured these four constructs (see Supporting Information), we considered the methods used within each construct to be sufficiently similar to justify their grouping for the purposes of data synthesis. In some cases there were discrepancies between the construct that studies reported to be measuring, and what was actually measured. In these cases, we used the measurement method, rather than the terminology, to inform our grouping of constructs.

Results of quality assessment

Results of quality assessment are provided in Table 2. Cross-sectional studies scored between one and six out of eight on the NOS, suggesting poor-to-moderate quality. Common problems were no justification of sample sizes, no description of nonrespondents, using questionnaires rather than diagnostic measures and inappropriate or poorly reported statistical tests. The two longitudinal studies scored two and six out of nine. Both used symptom questionnaires rather than diagnoses of anxiety, and neither adjusted for confounds. The two case–control studies were of higher quality than other study designs, scoring seven out of nine.

Data synthesis

Table 3 summarises the direction and statistical significance of all results (Thomson & Thomas, 2013). The following synthesis is presented under subheadings relating to the four school attendance constructs, plus a fifth heading for 'mixed school refusal and truancy'.

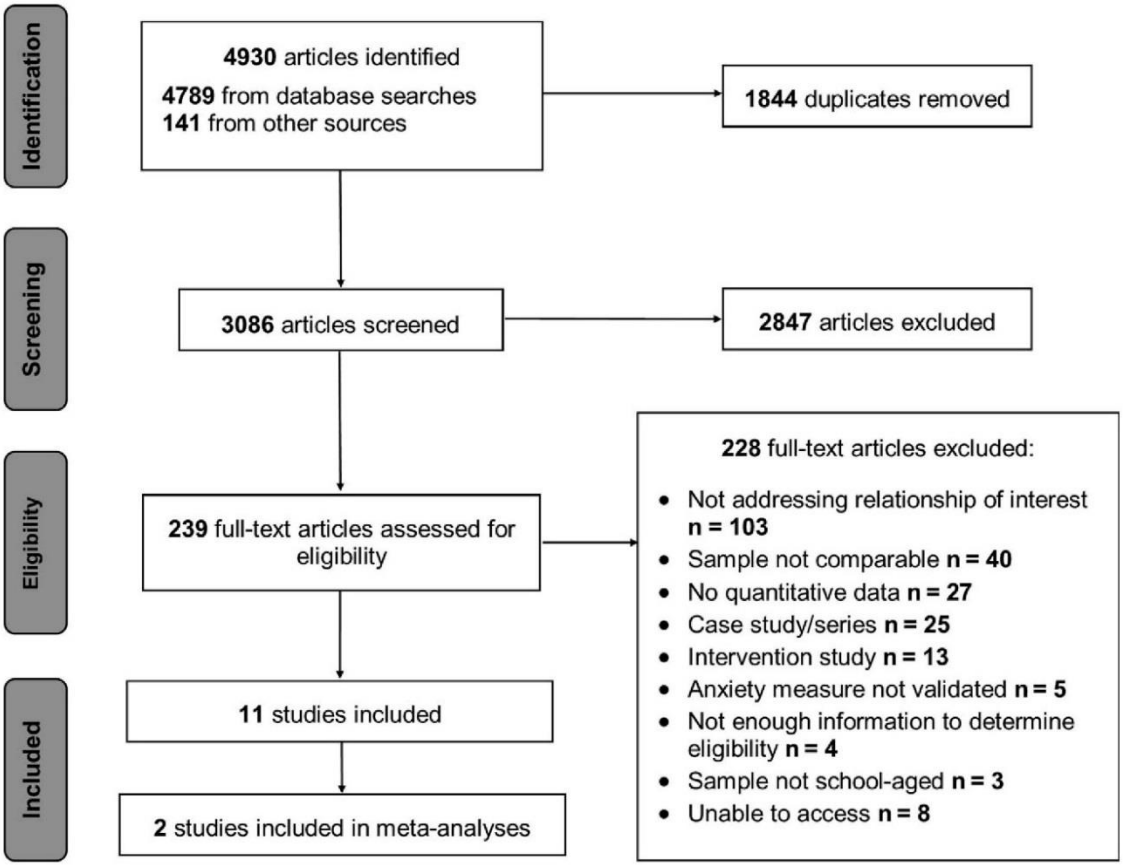

Figure 1. PRISMA diagram showing flow of studies through the review

Meta-analysis was only possible for small subsamples of studies, and the majority of results are synthesised narratively.

Absenteeism. One study investigated associations between overall absenteeism and anxiety, and reported a small positive, cross-sectional association (r = .08, 95% CI 0.01–0.15, p = .032), although this study was of poor quality (Tsar, 2011). There was no longitudinal evidence regarding associations between anxiety and absenteeism.

Excused/medical absences. Two studies reported associations between excused/medical absences and anxiety. Jones, Hoare, Elton, Dunhill, and Sharpe (2009) reported small, nonstatistically significant increased odds of anxiety for students who missed at least 20% of school days for medical reasons, compared to controls with good attendance (best 10% of the year group) (any anxiety disorder OR = 1.36, 95% CI 0.69–2.69, p = .380; obsessive-compulsive disorder OR = 2.07, 95% CI 0.99–4.2, p = .060; post-traumatic stress disorder OR = 2.12, 95% CI 0.65–6.89, p = .220). Likewise, Burton, Marshal, and Chisolm (2014) reported a small and nonstatistically significant correlation between self-reported symptoms of anxiety and excused absences 6 months later (r = .17, 95% CI −0.02 to 0.35, p = .079). Overall, there is little evidence to suggest associations between anxiety and excused or medical absences.

Unexcused absences/truancy. There were mixed findings regarding associations between overall anxiety and unexcused absences/truancy. Vaughn et al. (2013) reported an association between a lifetime diagnosis of any anxiety disorder and 'moderate' (OR = 1.72, 95% CI 1.18–2.51, p = .005) and 'high' (OR = 3.46, 95% CI 1.72–6.79, p < .001) truancy. After adjusting for lifetime depression, this only remained statistically significant for moderate truancy (OR = 1.97, 95% CI 1.13–3.44, p = .017), however, this result is likely to be biased given that depression might lie on the causal pathway between anxiety and truancy. Pflug and Schneider (2016) reported a greater number of anxiety disorder screening questions answered 'yes' for truants compared to nontruants (Cohen's d = 0.21, 95% CI 0.00–0.42, p = .046), but Corville-Smith, Ryan, Adams, and Dalicandro (1998) reported only weak evidence of a difference in anxiety symptoms between cases with a high number of unexcused absences and controls with good attendance (d = 0.49, 95% CI 0.06–1.03, p = .076), although this was based on a small sample (n = 54). Hunt and Hopko (2009) also reported little evidence for an association between self-reported anxiety and unexcused absences in a

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Table 1. Summary of study characteristics

Study	Country	Publication status	Design	Emotional disorder and school attendance main aim?	Recruitment setting	Sample size (% female)	Age in years (mean (*SD*); range, as provided)	Ethnicity
Burton 2014	USA	Journal	LO (follow-up 6 months)	N	Two primary care medical clinics, Pennsylvania & Ohio	108 (71%)	16.3 (0.9) T1 14–19 T1	59% African-American
Corville-Smith 1998	Canada	Journal	CC	Y (one of)	Two high schools from one small city in Ontario	54 (70%)	15–19	NR
Egger 2003	USA	Journal	CS	Y	Public schools in 11 counties in North Carolina, taking part in GSMS	1422[a] (44%)	9–16	70% White
Green 2005	UK	Report	CS	N	Children and adolescents living in private households in England, Scotland and Wales, sampled via UK Child Benefit Records	7621/4689[b] (48%)	5–16	86% White[b]
Hunt 2009	USA	Journal	CS	Y (one of)	Four high schools in Appalachian mountains	367 (58%)	15.9 (1.4) 4–19	94% Caucasian
Ingul 2012	Norway	Journal	CS	Y	One urban and one rural high school	809 (52%)	17.2 (1.2) 16–21	NR
Jones 2009	Scotland	Journal	Nested CC	Y (one of)	Ten representative local authority secondary schools in Edinburgh	184 (60%)	15.0 13–16	NR
Park 2015	South Korea	Journal	LO (follow-up 5 months)	Y	Participants expected to enter primary school in next 2 months, from 34 kindergartens in Seoul	248 (48%)	6–7 T1	NR
Pflug 2016	Germany	Journal	CS	Y (one of)	Social network, advert in journal for teachers & Facebook profile; open to all secondary-aged students in Germany	977/1140[c] (47%)	15.1 (2.3) 10–21	NR
Tsar 2011	Canada	Thesis	CS	N	Fifty randomly selected schools in large district school board, Ontario	715 (53%)	10.4 (0.5)	71% Caucasian
Vaughn 2013	USA	Journal	CS	Y (one of)	Representative sample of US youth selected through multistage area probability sampling (NSDUH study)	13,056 (49%)	14.6 (1.7)	59% White

CC, Case–control; CS, Cross-sectional; GSMS, Great Smoky Mountains Study; LO, Longitudinal; N, no; NR, not reported; NSDUH, National Survey on Drug Use and Health; T1, time-point one; Y, yes.
[a]Egger et al. (2003) aggregated data from multiple time waves and thus analysed 6676 observations from 1422 participants.
[b]Green et al. (2005) had total sample of 7977, of which school attendance data were available for 7621 and 4689 using parent- and teacher-reports, respectively; gender and ethnicity distribution refers to entire 7977 sample.
[c]Pflug (2016) had a total sample of 1359, of which 1140 had data from diagnostic interviews and 977 had data from the Strengths and Difficulties Questionnaire; gender distribution refers to entire 1359 samples.

Table 2. Results of quality assessment (Newcastle-Ottawa Scale)

	Selection					Comparability	Outcome			Total (out of 8)
Cross-sectional studies	Representative-ness	Sample size	Nonrespondents	Ascertainment of anxiety		Comparability	Assessment of school attendance	Statistical test		
Pflug 2016	+	–	–	–		–	–	–		1
Tsar 2011	+	–	–	–		–	+	–		2
Ingul 2012	+	–	+	–		–	+	–		3
Green 2005	+	–	–	+		++	–	–		4
Hunt 2009	+	–	–	–		++	+	–		4
Vaughn 2013	+	–	–	–		++	–	+		4
Egger 2003	+	–	–	+		++	+	+		6
	Selection					Comparability	Outcome			
Longitudinal studies	Representativeness of exposed	Selection of nonexposed	Ascertainment of exposure	Outcome not present at start		Comparability	Ascertainment of outcome	Length of follow-up	Adequacy of follow-up	Total (out of 9)
Burton 2014	–	+	–	–		–	–	+	–	2
Park 2015	+	+	+	+		–	–	+	+	6
	Selection					Comparability	Exposure			
Case-control studies	Definition of cases	Representativeness of cases	Selection of controls	Definition of controls		Comparability	Ascertainment of exposure	Same method of ascertainment	Nonresponse rate	Total (out of 9)
Corville-Smith 1998	+	+	+	+		++	–	+	–	7
Jones 2009	+	+	+	+		++	–	+	–	7

+ One star awarded as per the NOS rating scale; ++ two stars awarded as per the NOS rating scale; – no stars awarded as per the NOS rating scale. A higher score reflects greater study quality (i.e lower risk of bias).

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Table 3. Effect direction plot showing associations between anxiety and school attendance for all included studies

					School attendance construct				
Study	Design	Quality rating	Sample size	Anxiety measurement type	Absenteeism	Excused or medical absences	Unexcused absences or truancy	School refusal	Mixed school refusal & truancy
Cross-sectional associations between total anxiety and school attendance									
Corville-Smith 1998	CC	7/9	54	Continuous			△		
Hunt 2009	CS	4/8	367	Continuous			○		
Pflug 2016	CS	1/8	1140	Continuous			▲		
Tsar 2011	CS	2/8	715	Continuous	▲				
Jones 2009	Nested CC	7/9	184	Diagnostic		△			
Vaughn 2013	CS	4/8	13,056	Other			▲		
Cross-sectional associations between separation anxiety and school attendance									
Ingul 2012	CS	3/8	809	Continuous			△		
Egger 2003	CS	6/8	1422	Diagnostic			▽	▲	▲
Green 2005	CS	4/8	4689	Diagnostic			△		
Pflug 2016	CS	1/8	1140	Other			△		
Cross-sectional associations between generalised anxiety and school attendance									
Ingul 2012	CS	3/8	809	Continuous			▲		
Egger 2003	CS	6/8	1422	Diagnostic			△	○	△
Green 2005	CS	4/8	4689	Diagnostic			▲		
Pflug 2016	CS	1/8	1140	Other			△		
Cross-sectional associations between social anxiety and school attendance									
Ingul 2012	CS	3/8	809	Continuous			▲		
Egger 2003	CS	6/8	1422	Diagnostic			△	△	
Pflug 2016	CS	1/8	1140	Other			▲		
Cross-sectional associations between panic disorder and school attendance									
Egger 2003	CS	6/8	1422	Diagnostic			△	○	▲
Pflug 2016	CS	1/8	1140	Other			△		
Cross-sectional associations between simple phobia and school attendance									
Egger 2003	CS	6/8	1422	Diagnostic			○	△	
Green 2005	CS	4/8	4689	Diagnostic			▲		
Cross-sectional associations between OCD and school attendance									
Jones 2009	Nested CC	7/9	184	Diagnostic		△			
Cross-sectional associations between PTSD and school attendance									
Jones 2009	Nested CC	7/9	184	Diagnostic		△			
Cross-sectional associations between agoraphobia and school attendance									
Pflug 2016	CS	1/8	1140	Other			△		
Longitudinal associations between total anxiety and subsequent school attendance									
Burton 2014	LO	2/9	108	Continuous		△	△		
Park 2015	LO	6/9	248	Continuous				△	
Longitudinal associations between separation anxiety and subsequent school attendance									
Park 2015	LO	6/9	248	Diagnostic				△	

▲ = positive association ($p < .05$); △ = positive association ($p \geq .05$); ▽ = no association (Egger 2003 reported an odds ratio of 1.0); △ = negative association ($p > .05$); ○ = conflicting results. CC, case–control; CS, cross-sectional; LO, longitudinal; OCD, obsessive-compulsive disorder; PTSD, post-traumatic stress disorder.
Where studies reported multiple outcomes: if at least 70% in the same direction and statistical significance – reported as one; if <70% in same direction – reported as conflicting results; if same direction and at least 70% statistically significant – reported as significant; if same direction but <70% significant – reported as not significant. Procedure derived from Thomson and Thomas (2013).

correlation ($r = .05$, 95% CI −0.05 to 0.15, $p = .339$), and multiple linear regression adjusting for other predictors (regression coefficient = −0.05, $p = .542$; suggesting that for each one point increase on the Youth Self-Report anxiety subscale, unexcused absences decreased by 0.05 days). Only one study reported longitudinal evidence and found a nonstatistically significant correlation between baseline anxiety symptoms and unexcused absences at 6 months ($r = .15$, 95% CI −0.04 to 0.33, $p = .121$; Burton et al., 2014).

In terms of particular types of anxiety, two studies demonstrated positive, cross-sectional associations between unexcused absences and social anxiety, both in response to a social anxiety screening question (OR = 1.98, 95% CI 1.27–3.08, $p = .003$; Pflug & Schneider, 2016), and a self-report questionnaire that compared students with 'high' versus 'no' ($d = 0.34$, 95% CI 0.10–0.58, $p = .005$) and 'high' versus 'normal' ($d = 0.33$, 95% CI 0.12–0.54, $p = .003$) unexcused absences (Ingul, Klöckner, Silverman, & Nordahl, 2012). Egger et al. (2003), however, found little evidence of an association between truancy and social anxiety assessed via diagnostic interview (OR = 0.3, 95% CI 0.1–1.4, $p = .100$). Meta-analysis of two studies found little evidence for an association between unexcused absences/truancy and separation anxiety disorder (SAD) (pooled OR = 0.75, 95% CI 0.22–2.57, $p = .65$; see Figure 2). Additional findings that could not be meta-analysed also

provided little evidence for an association. Pflug and Schneider (2016) reported no association between unexcused absences and an SAD screening question (OR = 0.84, 95% CI 0.30–2.37, p = .741). Ingul et al. (2012) reported a difference in self-reported SAD symptoms between students with 'high' and 'no' unexcused absences (d = 0.36, 95% CI 0.12–0.60, p = .003), but not when comparing those with 'high' and 'normal' unexcused absences (d = 0.19, 95% CI −0.03 to 0.40, p = .088).

Meta-analysis of two studies also revealed little evidence for an association between unexcused absences/truancy and generalised anxiety disorder (GAD) (pooled OR = 1.62, 95% CI 0.35–7.53, p = .54; see Figure 3), although there was substantial heterogeneity between studies (I^2 = 79%), with Green, McGinnity, Meltzer, Ford, and Goodman (2005) reporting a moderate positive association and Egger et al. (2003) reporting a small negative association. Pflug and Schneider (2016) reported no association between unexcused absences and answers to a GAD screening question (OR = 1.37, 95% CI 0.90–2.07, p = .138), but Ingul et al. (2012) reported differences in GAD symptoms when comparing students with 'high' and 'no' (d = 0.45, 95% CI 0.21–0.69, p < .001) and 'high and 'normal' (d = 0.30, 95% CI 0.08–0.51, p = .007) unexcused absences. There was little evidence for associations between unexcused absences/truancy and specific phobia (pooled OR = 1.57, 95% CI 0.41–5.92, p = .51; see Figure 4), agoraphobia (OR = 1.15, 95% CI 0.71–1.87, p = .572; Pflug and Schneider (2016)) or panic disorder assessed via a screening question (OR = 1.32, 95% CI 0.85–2.06, p = .219; Pflug and Schneider (2016)) or diagnostic interview (OR = 0.7, 95% CI 0.1–3.7, p = .700; Egger et al. (2003)).

Overall, there is evidence to suggest that unexcused absences/truancy may be associated with symptoms of anxiety in general, as well as social anxiety disorder and GAD specifically. However, findings between individual studies were inconsistent, and there was a lack of longitudinal research.

School refusal. Using diagnostic interviews, Egger et al. (2003) reported large positive, cross-sectional associations between school refusal and SAD (OR = 11.0, 95% CI 4.9–24.0, p < .001), social anxiety (OR = 6.6, 95% CI 2.6–17.0, p < .001), GAD (OR = 2.9, 95% CI 1.0–8.0, p = .050) and simple phobia (OR = 11.0, 95% CI 3.3–39.0, p < .001). After adjusting for psychiatric comorbidity, only the association with SAD remained statistically significant, however, these results may be biased given that other disorders might be on the causal pathway between anxiety and school refusal. One longitudinal study found little evidence for differences in baseline state (d = 0.31, 95% CI −0.15 to 0.78, p = .342) or trait (d = 0.28, 95% CI −0.19 to 0.75, p = .216) anxiety, nor SAD assessed via diagnostic interview (OR = 1.30, 95% CI 0.47–3.57, p = .618), for students with and without school refusal at 5-month follow-up (Park et al., 2015). However, this study had low statistical power due to the small number of school refusal cases (n = 19).

Overall, therefore, the evidence suggests that school refusal may be associated with SAD, GAD, social anxiety and simple phobia, but there is little evidence for a longitudinal association. However, only two studies investigated these relationships.

Mixed school refusal and truancy. Egger et al. (2003) reported large, positive, cross-sectional associations between mixed school refusal/truancy and SAD (OR = 19.0, 95% CI 3.3–110, p = .001), panic disorder

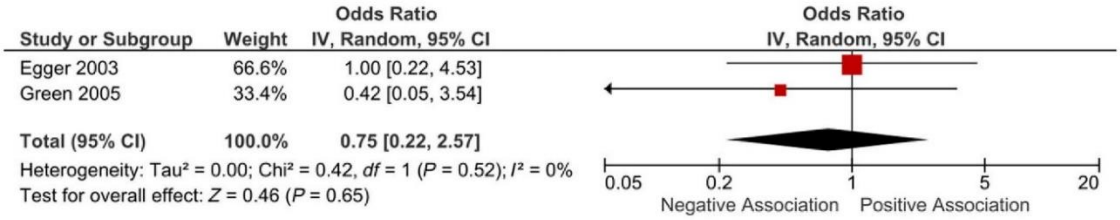

Figure 2. Forest plot showing pooled odds ratio for the association between SAD and unexcused absences/truancy

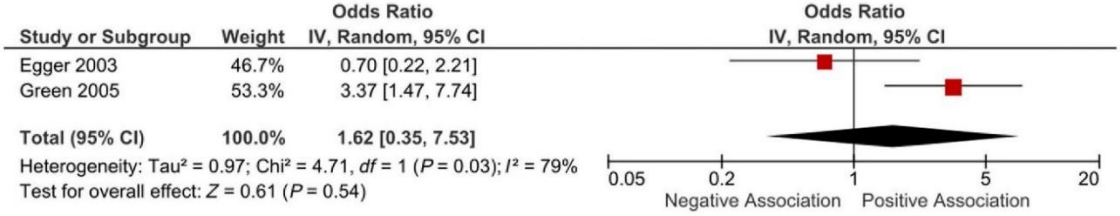

Figure 3. Forest plot showing pooled odds ratio for the association between GAD and unexcused absences/truancy

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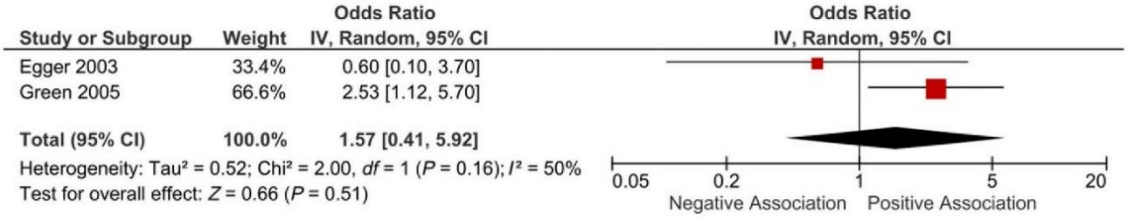

Figure 4. Forest plot showing pooled odds ratio for the association between specific phobia and unexcused absences/truancy

(OR = 38.0, 95% CI 11.0–135.0, $p < .001$), and GAD (OR = 4.4, 95% CI 1.0–19.0, $p = .040$). The association with GAD did not remain after adjusting for psychiatric comorbidity, but as previously described, this result is likely to be biased.

Discussion

This systematic review synthesised findings from 11 studies, and provided an overview of the evidence for the association between anxiety and poor school attendance. The greatest body of evidence was in relation to unexcused absences or truancy, which may be associated with anxiety overall, as well as GAD and social anxiety specifically. School refusal appears to be associated with SAD, GAD, social anxiety and simple phobia, although only two studies investigated this relationship. These conclusions should be interpreted in the light of the substantial limitations of the evidence, which are discussed below. There was little evidence with respect to absenteeism in general, or excused/medical absences, and there was also a lack of longitudinal research, preventing any conclusions about the direction of relationships.

The strength of the association between unexcused absences/truancy and anxiety varied between studies. Those that compared overall symptoms of anxiety for students with 'high' versus 'low' unexcused absences were more likely to report an association than studies that reported unexcused absences on a continuous scale. It is possible that unexcused absences are associated with anxiety only when they exceed a certain threshold, perhaps because the avoidance of school may reduce anxiety in these subclinical cases. Egger et al. (2003) found little evidence for associations between truancy and social anxiety or GAD, despite other studies reporting statistically significant associations (Green et al., 2005; Ingul et al., 2012; Pflug & Schneider, 2016). Egger et al. (2003) was of higher quality, but they also used a unique definition of truancy that required 'truants' to have missed at least a half day in the previous 3 months, stayed at home in the mornings, been taken to school to ensure arrival and/or failed to reach school or left early, which was *not* deemed to be due to anxiety or emotional disturbance. The majority of studies, by contrast, measured truancy as the number of unexcused absences. It could be argued that the construct measured by Egger et al. (2003) was of higher quality than the other studies, but, and the lack of association in their study is perhaps unsurprising given the stipulation that absence was 'not due to anxiety or emotional disturbance'.

Our findings support previous claims regarding the lack of consensus over how best to measure and define poor attendance (Heyne et al., 2018; Kearney, 2008b; Lauchlan, 2003; Pellegrini, 2007). Studies used widely varied methods to assess attendance (see supplementary information in Abstract S1.), which hampered our ability to draw broad conclusions. Furthermore, whilst 'truancy' and 'unexcused absence' are sometimes considered to represent different constructs, the studies included in this review tended to use these terms interchangeably, and many used the phrase 'truancy' when they had in fact measured unexcused absences. Achieving consensus on appropriate terminology, creating a clear definition and establishing agreed methods for measuring and reporting these constructs, should be a key priority for future research. Government policy may provide a helpful starting point for the development of such consensus. The UK Department for Education (DfE) uses the term 'persistent absence' to describe students who miss 10% or more of school sessions, whether authorised or unauthorised (Department for Education, 2018). This metric is also commonly utilised in the United States (Whitemore Schanzenbach, Bauer, & Mumford, 2016). However, it is unclear whether 10% is the most meaningful cut-point in terms of the potential for adverse educational, social or emotional consequences. Future research to explore the effects of different thresholds would help inform discussions about the measurement and reporting of poor attendance.

It is surprising that research to-date has largely focused on associations between anxiety and unexcused absences or truancy, since truancy is commonly believed to be associated with behavioural, rather than emotional disorders (Elliott & Place, 2009; Kearney, 2008b; Pellegrini, 2007). Further research is needed to investigate relationships between anxiety and absenteeism in general, as well as excused or authorised absences, especially given that the majority of absences are authorised (Department for Education, 2018; Kearney, 2008b). Since school staff take a more sympathetic approach to absence perceived to be related to anxiety, rather than behavioural difficulties (Finning et al., 2017; Torrens Armstrong et al., 2011), it is possible that the absences of anxious children are more likely to be authorised. Additionally, somatic symptoms commonly accompany anxiety (Campo, 2012) and if these symptoms are interpreted as signs of physical illness rather than emotional distress, any associated absences are likely to be authorised.

The majority of research to-date has been cross-sectional, and only two longitudinal studies (maximum follow-up period of 6 months) were included in this review. Longitudinal research is essential in order to

understand the direction of the association, which could have important implications for practice. For example, if anxiety is a cause of poor attendance, then attendance patterns may assist clinicians, school staff and families in identifying children with anxiety, which would allow for prompt recognition and implementation of appropriate intervention. However, the isolation and withdrawal associated with missing school may itself cause anxiety, which would have implications for children who are frequently absent from school, for example those with long-term conditions. Future research should utilise longitudinal data to explore the direction of these relationships.

Strengths and limitations

This was the first systematic review that we are aware of to synthesise the literature regarding associations between anxiety and poor school attendance. We followed best practice guidelines for conducting (Centre for Reviews and Dissemination, 2009) and reporting (Moher et al., 2009) systematic reviews. Our searches did not restrict by date or country, and anxiety had to be assessed using a validated scale or diagnostic measure, which included both diagnoses and symptoms of anxiety. The inclusion criteria for school attendance were broad, which resulted in a review with conceptual breadth. Grey literature was included, and searches were supplemented with additional search strategies to reduce the likelihood of missing relevant studies. Screening was independently completed by two reviewers, and data extraction and quality assessment completed by one reviewer and checked by a second, minimising bias and error.

However, there were also limitations. Methodological heterogeneity made synthesis challenging, restricted our ability to draw broad conclusions and limited our ability to combine studies in meta-analyses. The meta-analyses that were performed each included only two studies, which results in less certain effect estimates and a limited representation of between-study variance (Borenstein, Hedges, Higgins, & Rothstein, 2009). We were unable to assess publication bias as there were insufficient studies, and it is possible that such bias was present, although the searches included strategies to minimise this. The NOS was considered the most appropriate and user-friendly quality assessment tool for this review after extensive consideration and pilot testing of several tools. However, the NOS required adaptation in order for us to directly compare studies of different designs, and this limits comparability with other reviews. Given that the searches were conducted in December 2016, it is possible that new studies that meet our inclusion criteria have since been published.

There were also limitations of the included studies. Although variable, the quality of included studies was mostly poor-to-moderate. Five out of 11 studies only reported unadjusted results, which is important given that several variables are likely to confound the association between anxiety and school attendance (e.g. age, socioeconomic status). There were no longitudinal studies that adjusted for confounds. Results were often poorly reported, and rarely included effect estimates, confidence intervals and exact *p*-values. In addition, most used questionnaires to assess symptoms of anxiety rather than using diagnostic interviews to assess for clinical diagnoses. This benefits from allowing the entire spectrum of symptoms to be assessed, but given the key role that diagnostic frameworks play in policy and service provision, it may be helpful for future studies to also utilise clinical diagnoses.

Conclusions

There is evidence to suggest that both unexcused absences/truancy and school refusal are associated with anxiety. However, these conclusions should be interpreted in the light of the inconsistent findings between studies, and the limitations of the evidence. Little research has investigated associations between anxiety and total absenteeism, or excused/medical absences, despite the latter being the most common type of absence. There is also a lack of longitudinal research. These gaps should be a key priority for future research.

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Conflict of interest

The authors have declared that they have no competing or potential conflicts of interest.

Ethical information

No ethical approval was required for this review.

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Supporting information

Additional supporting information may be found online in the Supporting Information section at the end of the article:

Appendix S1. Summary of search terms and measurement types used by studies.

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Appendix Five: Supplementary material for quantitative cross-sectional study (Study Two)

Characteristics of participants for whom absence data was available compared to those for whom absence data was missing

	Absence data available (N=4123)	Absence data missing (N=3854)
Age in years: Mean (SD)	10.27 (3.38)	10.83 (3.40)
Gender: N (%)		
Male	2132 (51.6)	1979 (51.5)
Female	2000 (48.4)	1866 (48.5)
Ethnicity: N (%)		
White	3616 (87.6)	3304 (86.0)
Ethnic minority	514 (12.5)	539 (14.0)
Housing tenure: N (%)		
Own home	3010 (72.9)	2657 (69.2)
Rented	1120 (27.1)	1185 (30.8)
Mother's highest qualification: N (%)		
Degree or diploma	1153 (28.8)	913 (24.5)
A-level or good GCSE	1682 (41.6)	1534 (41.2)
Poor GCSE or other	517 (12.8)	544 (14.6)
None	678 (16.8)	734 (19.7)
Learning difficulty: N (%)		
No	3738 (90.5)	3475 (91.5)
Borderline, moderate or severe	391 (9.5)	325 (8.6)
Stressful life events: Mean (SD)	0.97 (1.13)	1.08 (1.19)
Family structure: N (%)		
Traditional	2742 (66.4)	2370 (61.6)
Single-parent, reconstituted, or other	1390 (33.6)	1475 (38.4)
Child's general health: N (%)		
Very good or good	3872 (94.9)	3529 (93.3)
Fair, bad or very bad	209 (5.1)	255 (6.7)
Parental mental health*: Mean (SD)	1.58 (2.61)	1.67 (2.69)

Rate of school absence according to emotional disorder status and parent- and teacher-reported emotional difficulties scores, based on complete case data

	TOTAL ABSENCE		AUTHORISED ABSENCE		UNAUTHORISED ABSENCE	
	Rate ratio & 95% CI	p-value	Rate ratio & 95% CI	p-value	Rate ratio & 95% CI	p-value
Anxiety disorder						
Unadjusted	2.15 (1.71 to 2.71)	p<0.001	2.01 (1.59 to 2.54)	p<0.001	3.30 (1.61 to 6.76)	p=0.001
Adjusted	1.61 (1.28 to 2.03)	p<0.001	1.55 (1.22 to 1.98)	p<0.001	1.51 (0.76 to 3.00)	p=0.235
Depressive disorder						
Unadjusted	4.66 (3.28 to 6.62)	p<0.001	3.03 (2.00 to 4.60)	p<0.001	16.78 (7.78 to 36.18)	p<0.001
Adjusted	3.18 (2.20 to 4.59)	p<0.001	2.19 (1.38 to 3.45)	p=0.001	6.89 (2.80 to 16.92)	p<0.001
Parent-reported emotional difficulties						
Unadjusted	1.11 (1.08 to 1.14)	p<0.001	1.12 (1.10 to 1.15)	p<0.001	1.24 (1.15 to 1.33)	p=0.001
Adjusted	1.07 (1.04 to 1.09)	p<0.001	1.07 (1.05 to 1.10)	p<0.001	1.01 (0.93 to 1.09)	p=0.854
Teacher-reported emotional difficulties						
Unadjusted	1.14 (1.11 to 1.16)	p<0.001	1.12 (1.10 to 1.15)	p<0.001	1.24 (1.15 to 1.33)	p<0.001
Adjusted	1.10 (1.08 to 1.13)	p<0.001	1.10 (1.08 to 1.12)	p<0.001	1.11 (1.04 to 1.20)	p=0.003

Results of Wald tests of interaction

	Total absences	Unauthorised absences	Authorised absences
GENDER			
Any anxiety disorder	p=0.25 p=0.31	p=0.14 p=0.58	p=0.51 p=0.49
Any depressive disorder	p=0.67 p=0.14	p=0.49 p=0.38	p=0.86 p=0.40
Emotional difficulties (parent-report)	p=0.62 p=0.95	p=0.16 p=0.89	p=0.75 p=0.93
Emotional difficulties (teacher-report)	p=0.77 p=0.54	p=0.70 p=0.62	p=0.21 p=0.15
SCHOOL LEVEL (*primary* versus *secondary*)			
Any anxiety disorder	p=0.08 p=0.18	p=0.56 p=0.39	p=0.11 p=0.24
Any depressive disorder	p=0.83 p=0.50	p=0.07 p=0.15	**p=0.002** **p<0.001**
Emotional difficulties (parent-report)	**p=0.02** **p=0.04**	**p<0.001** **p=0.003**	p=0.10 p=0.08
Emotional difficulties (teacher-report)	p=0.07 p=0.30	p=0.13 p=0.53	p=0.66 p=0.80
GENERAL HEALTH (*very good or good* versus *fair, bad or very bad*)			
Any anxiety disorder	p=0.96 p=0.47	p=0.19 p=0.43	p=0.40 p=0.19
Any depressive disorder	p-0.44 p=0.63	p=0.92 p=0.97	p=0.39 p=0.61
Emotional difficulties (parent-report)	p=0.07 p=0.18	p=0.09 p=0.09	p=0.08 p=0.16
Emotional difficulties (teacher-report)	p=0.62 p=0.71	**p=0.01** **p<0.001**	p=0.96 p=0.90

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Appendix Six: Supplementary material for quantitative bi-directional study (Study Three)

Proportion of missing data for each variable

Variable	N (%) missing	
	2004 (N=7,977)	2007 (N=5,326)
Emotional disorder (DAWBA)	0	0
Emotional difficulties (SDQ)		
Parent report	45 (0.6%)	43 (0.8%)
Teacher report	1979 (25%)	2197 (41%)
School absence	3854 (48%)	3348 (63%)
Age	0	N/A
Gender	0	N/A
Ethnicity	4 (0.05%)	N/A
Mother's educational qualifications	212 (2.7%)	N/A
Family structure	0	N/A
Housing tenure	5 (0.06%)	N/A
Stressful life events	203 (2.5%)	N/A
Learning difficulty	48 (0.6%)	N/A

NB Missing data is only described for confounders at baseline (2004), as the follow-up data from these variables were not included in any analyses.

Unadjusted characteristics of participants for whom absence data was missing compared to non-missing in both surveys

	2004 absence data missing (N=3845)		2007 absence data missing (N=3348)	
	OR (95% CI)	**p value**	**OR (95% CI)**	**p value**
Age in years	1.05 (1.04 to 1.06)	<0.001	1.18 (1.16 to 1.20)	<0.001
Gender				
Male	1.00	-	1.00	-
Female	1.01 (0.92 to 1.1)	0.909	1.01 (0.91 to 1.13)	0.813
Ethnicity				
White	1.00	-	1.00	-
Ethnic minority	1.15 (1.01 to 1.31)	0.037	1.29 (1.07 to 1.57)	0.008
Housing tenure				
Own home	1.00	-	1.00	-
Rented	1.20 (1.09 to 1.32)	<0.001	1.28 (1.12 to 1.47)	<0.001
Mother's highest qualification				
Degree or diploma	1.00	-	1.00	-
A-level or good GCSE	1.16 (1.04 to 1.30)	0.008	1.12 (0.98 to 1.28)	0.095
Poor GCSE or other	1.34 (1.16 to 1.55)	<0.001	1.35 (1.11 to 1.63)	0.002
None	1.38 (1.20 to 1.58)	<0.001	1.50 (1.26 to 1.80)	<0.001
Learning difficulty				
No	1.00	-	1.00	-
Borderline, moderate or severe	1.23 (1.12 to 1.35)	<0.001	0.98 (0.79 to 1.20)	0.823
Stressful life events	1.09 (1.05-1.13)	<0.001	1.12 (1.07-1.18)	<0.001
Family structure				
Traditional	1.00	-	1.00	-
Single-parent, reconstituted, or other	1.23 (1.12 to 1.35)	<0.001	1.24 (1.09 to 1.40)	0.001
Child's general health				
Very good or good	1.00	-	1.00	-
Fair, bad or very bad	1.34 (1.11 to 1.62)	0.002	1.14 (0.88 to 1.47)	0.319
Parental mental health (GHQ)	1.01 (1.0 to 1.03)	0.165	1.02 (1.0 to 1.05)	0.051

CI – confidence interval; GHQ – General Health Questionnaire; OR – odds ratio.

Results from complete case analyses

1. The impact of baseline (2004) emotional disorder/difficulties on school absence at follow-up (2007) – complete case analysis

	TOTAL ABSENCE (2007)		AUTHORISED ABSENCE (2007)		UNAUTHORISED ABSENCE (2007)	
	Rate ratio & 95% CI	p-value	Rate ratio & 95% CI	p-value	Rate ratio & 95% CI	p-value
Anxiety disorder						
Unadjusted	1.540 (1.137 to 2.085)	0.005	1.403 (1.077 to 1.827)	0.012	2.249 (0.924 to 5.475)	0.074
Adjusted	1.325 (0.932 to 1.883)	0.117	1.192 (0.878 to 1.618)	0.259	3.140 (1.099 to 8.976)	0.033
Depressive disorder						
Unadjusted	3.266 (1.062 to 10.049)	0.039	1.999 (0.969 to 4.124)	0.061	10.185 (2.024 to 51.261)	0.005
Adjusted	2.934 (0.692 to 12.450)	0.144	1.601 (0.498 to 5.144)	0.430	16.439 (2.777 to 97.328)	0.002
Parent-reported emotional difficulties						
Unadjusted	1.010 (0.975 to 1.046)	0.568	1.022 (0.988 to 1.058)	0.207	0.971 (0.867 to 1.087)	0.608
Adjusted	0.989 (0.951 to 1.026)	0.558	0.999 (0.963 to 1.037)	0.973	0.940 (0.844 to 1.047)	0.260
Teacher-reported emotional difficulties						
Unadjusted	1.035 (0.989 to 1.082)	0.140	1.009 (0.967 to 1.052)	0.683	1.139 (0.997 to 1.302)	0.055
Adjusted	1.017 (0.973 to 1.064)	0.456	0.998 (0.955 to 1.043)	0.928	1.114 (0.993 to 1.249)	0.066

CI – confidence interval. Rate ratios for anxiety and depressive disorders refer to the increase in the rate of absence at follow-up for children with the disorder at baseline compared to those with no disorder at baseline. Rate ratios for emotional difficulties scores refer to the increase in the rate of absence at follow-up for each one-point increase on the emotional problems subscale (where scores can range from 0 to 10) at baseline. Multivariable models adjusted for child's age, gender and ethnicity; housing tenure; mother's highest educational qualification; learning difficulty; stressful life events; and family type (traditional versus single-parent, reconstituted or other.

2. The impact of baseline (2004) school absence on emotional disorder/difficulties at follow-up (2007) – complete case analysis

	2007 ANXIETY DISORDER		2007 DEPRESSIVE DISORDER		2007 PARENT-REPORTED EMOTIONAL DIFFICULTIES		2007 TEACHER-REPORTED EMOTIONAL DIFFICULTIES	
	Odds ratio & 95% CI	**p-value**	**Odds ratio & 95% CI**	**p-value**	**Regression coefficient & 95% CI**	**p-value**	**Regression coefficient & 95% CI**	**p-value**
Total absence								
Unadjusted	1.17 (1.02 to 1.34)	0.030	1.17 (0.94 to 1.46)	0.160	0.17 (0.10 to 0.23)	<0.001	0.15 (0.06 to 0.23)	0.001
Adjusted	1.04 (0.88 to 1.23)	p.638	1.01 (0.78 to 1.32)	0.932	0.10 (0.03 to 0.17)	0.003	0.09 (0.00 to 0.17)	0.042
Authorised absence								
Unadjusted	1.22 (1.03 to 1.44)	0.019	1.27 (0.99 to 1.64)	0.065	0.17 (0.10 to 0.24)	<0.001	0.18 (0.09 to 0.27)	<0.001
Adjusted	1.07 (0.89 to 1.29)	0.466	1.12 (0.84 to 1.50)	0.431	0.10 (0.03 to 0.17)	0.007	0.12 (0.03 to 0.21)	0.013
Unauthorised absence								
Unadjusted	**1.10 (0.74 to 1.63)**	**0.636**	**0.28 (0.01 to 5.96)**	**0.411**	**0.23 (0.04 to 0.41)**	**0.016**	**0.02 (-0.25 to 0.28)**	**0.898**
Adjusted	**0.91 (0.55 to 1.51)**	**0.721**	**0.09 (0.00 to 4.71)**	**0.236**	**0.15 (-0.03 to 0.33)**	**0.109**	**-0.07 (-0.36 to 0.19)**	**0.590**

CI – confidence interval. Odds ratios refer to the change in odds of anxiety/depression at follow-up for each five-day increase in absence at baseline. Regression coefficients refer to the increase in emotional difficulties scores (where scores can range from 0-10) at follow-up for each five-day increase in absence at baseline. Multivariable models adjusted for child's age, gender and ethnicity; housing tenure; mother's highest educational qualification; learning difficulty; stressful life events; and family type (traditional versus single-parent, reconstituted or other).

Appendix Seven: Supplementary material for qualitative study (Study Four)

Consolidated criteria for reporting qualitative studies (COREQ): 32-item checklist

Developed from: Tong A, Sainsbury P, Craig J. Consolidated criteria for reporting qualitative research (COREQ): a 32-item checklist for interviews and focus groups. *International Journal for Quality in Health Care*. 2007. Volume 19, Number 6: pp. 349 – 357

No. Item	Guide questions/description	Reported on Page #
Domain 1: Research team and reflexivity		
Personal Characteristics		
1. Inter viewer/facilitator	Which author/s conducted the interview or focus group?	7
2. Credentials	What were the researcher's credentials? E.g. PhD, MD	7
3. Occupation	What was their occupation at the time of the study?	7
4. Gender	Was the researcher male or female?	N/A
5. Experience and training	What experience or training did the researcher have?	7
Relationship with participants		
6. Relationship established	Was a relationship established prior to study commencement?	7
7. Participant knowledge of the interviewer	What did the participants know about the researcher? E.g. personal goals, reasons for doing the research	7
8. Interviewer characteristics	What characteristics were reported about the inter viewer/facilitator? E.g. Bias, assumptions, reasons and interests in the research topic	N/A
Domain 2: study design		
Theoretical framework		
9. Methodological orientation and Theory	What methodological orientation was stated to underpin the study? E.g. grounded theory, discourse analysis, ethnography, phenomenology, content analysis	6-7
Participant selection		
10. Sampling	How were participants selected? E.g. purposive, convenience, consecutive, snowball	6
11. Method of approach	How were participants approached? E.g. face-to-face, telephone, mail, email	6-7
12. Sample size	How many participants were in the study?	6-7
13. Non-participation	How many people refused to participate or dropped out? Reasons?	N/A

Setting		
14. Setting of data collection	Where was the data collected? E.g. home, clinic, workplace	7-8
15. Presence of non-participants	Was anyone else present besides the participants and researchers?	7-8
16. Description of sample	What are the important characteristics of the sample? E.g. demographic data, date	Tables 19 & 20
Data collection		
17. Interview guide	Were questions, prompts, guides provided by the authors? Was it pilot tested?	p7; Supp Material
18. Repeat interviews	Were repeat inter views carried out? If yes, how many?	N/A
19. Audio/visual recording	Did the research use audio or visual recording to collect the data?	8
20. Field notes	Were field notes made during and/or after the interview or focus group?	8
21. Duration	What was the duration of the inter views or focus group?	8
22. Data saturation	Was data saturation discussed?	20
23. Transcripts returned	Were transcripts returned to participants for comment and/or correction?	N/A
Domain 3: analysis and findings		
Data analysis		
24. Number of data coders	How many data coders coded the data?	7-8
25. Description of the coding tree	Did authors provide a description of the coding tree?	9-15; Figure 23
26. Derivation of themes	Were themes identified in advance or derived from the data?	8
27. Software	What software, if applicable, was used to manage the data?	8
28. Participant checking	Did participants provide feedback on the findings?	N/A
Reporting		
29. Quotations presented	Were participant quotations presented to illustrate the themes/findings? Was each quotation identified? E.g. participant number	9-15
30. Data and findings consistent	Was there consistency between the data presented and the findings?	9-15
31. Clarity of major themes	Were major themes clearly presented in the findings?	9-15; Fig 1
32. Clarity of minor themes	Is there a description of diverse cases or discussion of minor themes?	9-15; 19

Focus Group Topic Guide

Discussion topic 1 – Previous experience

• What have been the challenges of having a student who is having difficulty attending school?

• When you have had a student with these difficulties, what was the pattern of their attendance beforehand (i.e. did their attendance gradually get worse or was it more sudden; was it predictable or not)?

Discussion topic 2 – The role of teachers

Now consider the role staff in supporting students who display signs of school refusal.

• When you have been involved with a student who isn't coming into school, what sort of things have you been doing??

• Can you describe instances when school refusal students have responded positively to what you or other teachers have done? How did the students' behaviour change? What approach did you take?

• Are there any times when what the teacher has done might have had a negative impact? Can you give examples without disclosing personal details?

• Do you think data is important when dealing with school refusal? (Question was added for final focus group)

Discussion topic 3 – The support available

Think about the support and intervention that is available in this school.

• When there have been students who are not attending school, what sort of support have they received?

Describe/give details?

• What about when they have been off school for a long time – months or years?

• What support strategies have been successful? Why do you think they were successful?

• How important has it been to involve parents?

• Are there any strategies have been unsuccessful? Why do you think they were unsuccessful?

• Have the teachers (either individually or as a school) received any training or support?

Discussion topic 4 – Further support

Consider specific gaps in the support for school refusal students, their families and school staff.

• Are there any changes would you make to the support and intervention that is currently available? Please give details.

• Imagine you had unlimited time and resources, in an ideal world what support and interventions would you like to be available?

• What support could school staff benefit from that is currently unavailable? How do you think this support could be implemented?

• What support could students benefit from that is currently unavailable? How do you think this support could be implemented?

• What support could parents/carers benefit from that is currently unavailable? How do you think this support could be implemented?

Closure

• Though there were a lot of different opinions it seems that (summarise some of the key points raised).

• Does anybody see the discussion differently? Does anyone want to add or clarify anything?

• Is there any other information regarding your experience of school refusal you think would be useful to share? Are there any other questions? Thanks for coming.

Appendix Eight: Secondary school practitioners' experiences of school attendance problems and interventions to address them – Additional published paper

EMOTIONAL AND BEHAVIOURAL DIFFICULTIES, 2017
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ARTICLE

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Secondary school educational practitioners' experiences of school attendance problems and interventions to address them: a qualitative study

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ABSTRACT

School attendance problems are associated with a range of adverse consequences, and educational practitioners play a role in identifying and responding to attendance problems. This qualitative study explored educational practitioners' experiences of working with students with attendance problems and interventions to address them. Focus groups were conducted with sixteen practitioners across three secondary schools. Data were analysed using thematic analysis. Attendance problems were considered resource-intensive and emotionally challenging. Practitioners expressed difficulty understanding causes, although individual/family factors were emphasised over school factors. A range of interventions were described, including adaptations to school context and providing emotional support. Views on punitive approaches were mixed. Individualised interventions implemented at the first sign of problems, and a team approach, were considered important. Findings highlight the important role of educational practitioners in identifying attendance problems and implementing interventions. Recommendations include early intervention, team-work, and emotional support for students with, and staff responding to, attendance problems.

KEYWORDS

School attendance; school; students; teachers; mental health

Introduction

School attendance problems threaten a young person's education, health and social-emotional development, and are associated with economic, psychiatric and social problems in adulthood (Kearney 2008a). A range of child, family and school factors are associated with school attendance problems, including mental or physical ill health in the young person; parental unemployment, poor mental health or history of not completing education; stressful family events; low parental involvement in education; bullying; authoritarian school management style, an inflexible curriculum not tailored to individual needs, low teacher morale, and negative student-teacher relationships (Egger, Costello, and Angold 2003; Ingul et al. 2012; Kearney 2008a; Kearney 2008b; Malcolm et al. 2003; Reid 2007; Thambirajah, Grandison, and De-Hayes 2008; Wimmer 2008).

School attendance problems can result from complex interactions between multiple risk factors, and understanding these interactions, as well as identifying what a young person might gain from not attending school, is key to effective prevention and management (Elliott and Place 2012; Kearney 2008b; Thambirajah, Grandison, and De-Hayes 2008; Wimmer 2008). Researchers, clinicians and educational practitioners have proposed that early identification of attendance problems, timely intervention, and a swift return to school increases the likelihood of successful outcomes

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Supplemental data for this article can be accessed here.

(Elliott and Place 2012; Kearney and Beasley 1994; Kearney and Graczyk 2014), and that delay in identifying and responding to the problem is a common reason for a poor prognosis (Thambirajah, Grandison, and De-Hayes 2008). A team approach involving students, school staff, parents, peers and health personnel, has been strongly encouraged (Brand and O'Conner 2004; Gren-Landell et al. 2015; Kearney 2008a; Kearney and Graczyk 2014; Wimmer 2008).

School staff are well placed to identify and address school attendance problems (Salemi and McCormack Brown 2003), and understanding their experience is key to advancing our understanding of the problem and potential interventions. In a study by Torrens Armstrong et al. (2011), school health personnel reported struggling to differentiate between different causes of school attendance problems, and constructed typologies such as 'the sick student', 'frequent fliers' and 'school phobics' to help them make sense of attendance problems and determine who they believed needed help versus punishment. Likewise, in a survey of Swedish teachers, problematic absenteeism was viewed as a multi-causal problem, with teachers expressing difficulty determining the causes for each child, although family factors and child mental health were considered more important than school factors (Gren-Landell et al. 2015). Conversely, a qualitative study with parents of school refusers highlighted the role of school factors in contributing to attendance problems, and parents emphasised the need for a coordinated team approach. They also believed that teachers did not have a good enough understanding of school attendance problems to identify and respond to students at risk (Havik, Bru, and Ertesvåg 2014).

Previous research has focused on understanding educational practitioners' perspectives of causal factors rather than investigating broader experiences, including support and intervention strategies that may or may not be helpful. Rates of overall absence in UK secondary schools have been declining since 2011/12, which may indicate increased awareness and attempts to address the problem, such as through changes in policy by the Department for Education (DfE (Department for Education) 2016, DfE (Department for Education) 2017). Nonetheless, 13.1% of UK secondary school students were absent for 10% or more of possible school sessions in the 2015/16 school year, and were deemed 'persistently absent' (DfE (Department for Education) 2017). This study aims to use qualitative methods to address the following research questions:

(1) What are secondary school educational practitioners' experiences of working with students with school attendance problems?
(2) What are secondary school educational practitioners' experiences of interventions for students with school attendance problems?

Methods

Data were collected using focus groups, which are useful in generating a rich understanding of participants' experiences and encouraging participants to make collective sense of phenomena by questioning and explaining concepts, as well as highlighting commonalities and contradictions between individuals (Barbour 2007; Morgan 1998).

Participants

Participants were 16 educational practitioners across three secondary schools in the South West of England, recruited via opportunity sampling. One focus group was conducted for practitioners at each of the three schools. To be included in the study, practitioners were required to have experience of working with students with school attendance problems. Table 1 provides further information on participating schools. Practitioners from a range of teaching and non-teaching roles were sought, in order to gain understanding of the experiences of those from a variety of job roles. The mean length of experience in schools was 12.9 years (SD 5.05). Table 2 provides characteristics of individual practitioners.

Table 1. Characteristics of Participating Schools.

Focus Group	School type	No. of pupils	Pupils eligible for pupil premium[a] (%)	Overall absence rate (%)	Persistent absence[b] (%)
1	State-funded academy converter[c] – mainstream	1622	19.2	5.9	15.5
2	State-funded academy converter – mainstream	1468	14.6	5.1	11.8
3	State-funded academy sponsor-led – mainstream	881	30.6	6.5	19.6

Source: DfE school comparison tool accessed via www.compare-school-performance.service.gov.uk. Data refers to the 2015/16 school year.
[a] Pupil Premium is additional funding provided to schools to raise the attainment of disadvantaged pupils. [b]Defined as ≥10% absence; National average is 13.1%.
[c]Academies are independent, state-funded schools that receive funding directly from central government rather than through a local authority. Converter academies are those deemed to be performing well that have converted to academy status; sponsor-led academies are mostly underperforming schools changing to academy status and run by sponsors.

Table 2. Characteristics of Participants.

Participant	Focus Group	Gender	Age	Job Role	Age of students	Years as teacher
P01	1	Male	40–49	Head of Key Stage 4*	11–18	10
P02	1	Male	30–39	SENCO	11–18	14
P03	1	Male	40–49	Assistant Head of Sixth Form	11–18	14
P04	1	Female	30–39	Head of Year	11–18	9
P05	1	Male	30–39	Head of Year & P.E. teacher	11–18	10
P06	1	Female	40–49	Head of Year 9	13–14	N/A
P07	2	Female	40–49	SENCO	11–18	20
P08	2	Male	50–59	Assistant Principal	11–18	17
P09	2	Female	30–39	Parent & Family Support Advisor	11–16	9
P10	2	Female	20–29	Student Support Worker	11–14	N/A
P11	2	Female	60+	Inclusion Manager	11–16	10
P12	2	Female	40–49	Student Support Worker	14–16	20
P13	3	Female	50–59	Family Liaison Worker	11–16	18
P14	3	Female	40–49	Personalised Learning Assistant	11–16	N/A
P15	3	Female	40–49	Personalised Learning Assistant	11–16	N/A
P16	3	Female	30–39	Deputy Safeguarding Lead	11–16	4

*Key Stage 4 refers to school Years 10 and 11, when students are aged 14–16 years. SENCO = Special Educational Needs Coordinator; P.E. = Physical Education

Focus groups

A semi-structured topic guide was used that asked about practitioners' experience of, and their role in responding to school refusal, the current support available, and further support they believed would be beneficial (full topic guide provided in Supplementary Material 1). The term 'school refusal' was used throughout focus groups, but participants were not given, nor asked to provide, a definition. Prompts were used where necessary to help participants elaborate on their responses, but questioning was flexible and practitioners were encouraged to introduce new topics. To facilitate open discussion, practitioners were advised that the aim was to explore everyone's views and were encouraged to express their honest opinions.

Procedure

Ethical approval for the study was given by the University of Reading Ethics Committee. Eighteen schools were approached to take part in the study by email from BD. Emails were followed up with a phone-call to the school, with further information provided on a recruitment poster. Three schools agreed to participate, and practitioners from these schools were recruited via word-of-mouth by a lead point of contact at the school; Head of Key Stage Four at the first school (Focus Group 1), Assistant Principle at the second (Focus Group 2), and Deputy Safeguarding Lead at the third (Focus

Group 3). Focus groups were conducted within schools, during or at the end of the working day, between May and July 2016, by BD who had prior experience as a teacher and was undertaking an MSc in Psychology, which included qualitative methods training. A moderator also attended each group to provide general assistance and make field-notes. BD had no relationship with participants prior to making contact for the study. Participants were advised that the aim of the research was to obtain a better understanding of educational practitioners' experiences in relation to school refusal. They provided written informed consent before participating. Focus groups lasted between 39 and 54 minutes. They were audio recorded, transcribed verbatim and double-checked for accuracy by a second researcher.

Data analysis

Data were analysed using thematic analysis as described by Braun and Clarke (2006), using QSR International's NVivo 11 software to organise the data. Thematic analysis is a flexible approach to qualitative analysis that assumes no underlying theoretical orientation. Transcripts were read and re-read by KF to familiarise herself with the dataset, while making notes and marking ideas for coding. Transcripts were then read line-by-line, and codes generated and applied to the data. Consistent with the constant comparison approach, each new concept emerging from the data was compared with existing concepts, allowing codes to be refined as analysis progressed (Boeije 2002). Negative cases were given consideration by annotating in NVivo any extracts that demonstrated an opposing view to the pattern emerging or views previously expressed.

The final list of codes were written on individual pieces of paper, allowing them to be represented visually in their entirety, and were sorted into themes based on their semantic similarity. For example, individual codes labelled 'building child's resilience', 'mental health support', 'pastoral support' and 'transition support' were combined into a theme called 'supporting the child'. Once an initial thematic map was developed, coded extracts from each theme were reviewed to ensure they formed a coherent pattern, with clear distinctions between each theme. Transcripts were re-read to ensure the themes appeared credible in relation to the entire dataset, and to allow any final coding to take place. Throughout this process, codes and themes were reviewed and discussed between KF, PW and KH. This process continued until the final thematic map was produced. Themes were defined by identifying their core aspects, and data within each theme were summarised, organised, and used to produce a narrative, which is presented in the results section.

Results

Analysis identified six themes, three related to each of the two research questions. Findings are summarised in Table 3.

Experiences of working with students with school attendance problems

Practitioners identified challenges of working with students with attendance problems, including limited resources and the need for emotional resilience. Practitioners also discussed the diversity of attendance problems, and difficulties understanding the causes for each student.

Limited resources

School attendance problems were described as resource-intensive, requiring time, money and effort from multiple stakeholders. Interventions were considered expensive, with funding cuts limiting the availability of support services. Group One believed the National Curriculum to be restrictive and unsuitable for some students, expressing a desire to offer more vocational subjects. Practitioners described the extensive time required to support students with attendance problems

Table 3. Research Questions, Themes and Summary of Results.

Research question	Theme	Summary of results
What are secondary school educational practitioners' experiences of working with students with school attendance problems?	Limited resources	Attendance problems were considered resource-intensive, requiring time, money and effort. Some believed they are going over and above their role. Accessing support services could be difficult, and mental or physical health diagnoses could be both a help and hindrance. Time delays at various stages of intervention were considered problematic. Some practitioners felt their ability to influence attendance problems was limited.
	Resilience required	Practitioners discussed the emotional challenges of supporting students with attendance problems, requiring effort and resilience over long periods. Attendance problems were described as a cycle, with students often relapsing after successful intervention. Working with parents could be challenging, but practitioners recognised the challenges for parents too.
	One size doesn't fit all	Attendance problems were described as a diverse issue, with different causes and no one solution for all. Understanding the causes for each student was considered important but difficult, and there was concern over misunderstanding the causes and making things worse. Some practitioners believed that school factors are rarely the cause of attendance problems.
What are secondary school educational practitioners' experiences of interventions for students with school attendance problems?	Adapting the school context	Practitioners described various adaptations made, including reduced timetabling, virtual classrooms, reintegration packages, home visits, having a designated point of contact, and alternative educational provision. Views on punitive approaches were mixed.
	Providing emotional support	Building the child's resilience and providing mental health support were considered important, especially at high-risk times such as the transition from primary to secondary school. Group Three placed high value on pastoral support and nurturance.
	Attendance problems are a shared responsibility	Practitioners discussed two-way relationships with parents: parental support was considered crucial, but there was also recognition of the need to support parents in return. School-based support staff were highly valued, and practitioners believed that positive outcomes require teamwork and shared responsibility.

and the risk of wasting time on those who fail to engage, with some considering themselves going *over and above* (P01, Head of Key Stage Four, Group One) their role as educators.

> *The teacher's going "I'm doing this voluntarily, we're trying to help the kid, he's not buying into it", that gets withdrawn because it's just, you're wasting their time, it could be used elsewhere helping other students, doing other things*. (P01, Head of Key Stage Four, Group One)

Practitioners discussed difficulties accessing support services such as alternative education provision and Child and Adolescent Mental Health Services (CAMHS), with limited places, strict eligibility thresholds or long waiting lists. Group One were especially critical of their local alternative education provision, describing it as a *doss* (P01, Head of Key Stage Four, Group One) that makes students' behaviour worse:

> *There's talk of someone setting up a free school to rival the local PRU* because it's so rubbish… they're going to set it up as somewhere you would not want to go to, which is how it should be… if you haven't got a strong, almost like a prison, the same reason that prison works, that strong school where you think "I don't want to end up there".* (P01, Head of Key Stage Four, Group One)

> *PRU = Pupil Referral Unit; a Local Authority establishment which provides education for children unable to attend mainstream school, for example due to exclusion.

Practitioners discussed particular difficulties accessing support for students without a diagnosable mental or physical health condition, but conversely medical diagnoses could be a barrier to implementing school-based interventions:

> *It would be very difficult then to get attendance involved or the Education Welfare Officer involved if there is medical evidence supporting that child should do an alternative timetable or reduced time…or not come into school.* (P08, Assistant Principal, Group Two)

Time delays in addressing attendance problems, such as setting up multi-agency meetings or reapplying for support that is removed prematurely, were considered problematic, causing the problem to spiral. Conversely Group Three appeared to have a different decision-making system, and described the benefits of having freedom to make their own decisions:

> *There is that lack of red tape that's good though isn't it and again you wouldn't get that, you know in a lot of secondary schools you'd have to go through lengthy meetings and decisions…it is about the kids, every day that goes on is a day that they're not in, we'd be waiting days and days for decisions to be made.* (P15, Personalised Learning Assistant, Group Three)

Practitioners described the limits of their ability to create change, with students spending a significant amount of time at home, and the family environment considered a critical factor. For students with a long history of attendance problems, the pattern of behaviour was considered particularly hard to change:

> *They've come from another school but there have also been patterns of attendance and behaviour issues, then that has a significant impact because it rarely gets better.* (P16, Deputy Safeguarding Lead, Group Three)

Resilience required

Practitioners in a variety of job roles discussed the emotional challenges of supporting students with attendance problems, requiring effort and resilience on a daily basis:

> *I think we're very resilient people ourselves…we have to accept the crazy, or the difficult, or the, every day you have to start again, and that might last for a whole year and you can never give up on those children, ever, ever, ever, ever, which we don't.* (P11, Inclusion Manager, Group Two)

Particular difficulties included a lack of time to reflect on good practice, and becoming desensitised to extreme behaviour displayed by students with attendance problems. The cycle or habit of attendance problems was considered hard to break, and practitioners expressed frustration about their extensive efforts resulting in only small or short-term gains:

> *The levels of resilience from all the stakeholders involved in trying to get that young person back into school need to be very high, because often these plans break down and don't succeed, they fall apart or they're not stuck to and you have to keep going back and starting again.* (P08, Assistant Principal, Group Two)

> *Often the successes with school refusers tend to be short lived and then they fall back into the habits again and the cycle.* (P02, Special Educational Needs Coordinator [SENCO], Group One)

Practitioners discussed the challenges of working with parents, particularly those who do not support their child's education, and difficulties communicating with parents who have a history of attendance problems themselves:

> *My biggest frustration is that so many parents won't buy-in in the first place to understanding why there it's a problem that their kid isn't in school.* (P01, Head of Key Stage Four, Group One)

> *And a lot of kids that school refuse, their parents have been school phobic in the past themselves, so getting them to school is quite difficult*. (P13, Family Liaison Worker, Group Three)

There was also recognition of the emotional challenges for parents. As P03 explained: *I get a lot of that, mum in tears…mum sort of rings in tears and just couldn't get her to come in* (P03, Assistant Head of Sixth Form, Group One). Practitioners also described having to provide reassurance to worried parents:

> *I'd have a message left on my phone from a really upset parent saying 'I've had to send him in because I've had to go to work, please can you go and check on him?' and actually when you did they were absolutely fine.* (P07, SENCO, Group Two)

One size doesn't fit all

Attendance problems were described as a diverse issue, with different causes for each student. As P04 explained: *The only thing that links all of these kids together is the fact that they don't come to school, that's it, that's the only thing* (P04, Head of Year, Group One). Practitioners placed value on understanding the causes for each student, but described difficulty in doing so. Reasons for attendance problems were often unclear and students could sometimes hide the underlying cause, for example when there were difficult family circumstances or child protection concerns. Practitioners expressed confusion and frustration in making sense of attendance problems:

> *I think understanding the issues is a really big barrier as well, I'd say we've all learnt quite a lot but I'm learning all the time about each, each case is so individual isn't it and I think that understanding, my own understanding and other people's understanding, can be a big barrier*. (P09, Parent & Family Support Advisor, Group Two)

> *The frustration is that we still even, whatever you do for people, I still don't understand quite why she won't come because when she's here, she's happy and that is the problem isn't it?* (P11, Inclusion Manager, Group Two)

Distinguishing between anxiety-based non-attendance and *bad behaviour* (P01, Head of Key Stage Four, Group One) was considered important in guiding the response, yet the differences were not always clear. Concerns were expressed over misunderstanding the causes and making the situation worse by rewarding oppositional behaviour or taking a punitive approach with students where non-attendance is caused by mental health difficulties:

> *The fine line that you're always walking with so many kids between this might be a mental health issue, this is something else, there's a family thing here and what is just this is a naughty kid and we're pandering to it. And you don't always get it right as a school or as individuals, you sometimes make the wrong call one way or the other.* (P01, Head of Key Stage Four, Group One)

Although the causes of attendance problems could be difficult to understand, several practitioners believed school to rarely be the cause, instead emphasising the role of child and family factors:

> *If you removed all the barriers that they say are the issue with school, then you'd still have the same problems and they'd still refuse, and we've proved that on a number of occasions haven't we? So yes it's everything that happens outside school*. (P16, Deputy Safeguarding Lead, Group Three)

Experiences of interventions for school attendance problems

Practitioners described a range of interventions, including adaptations to the school context, and providing emotional support to students. These were not always mutually exclusive, with some school-based adaptations also serving to support students emotionally, and vice-versa. Practitioners discussed the important role of multiple stakeholders, and the need for teamwork.

Regardless of the interventions used, practitioners believed they should be tailored to individual needs, and implemented at the first sign of problems:

Being able to personalise your response to that child, to see their situation, is key. (P16, Deputy Safeguarding Lead, Group Three)

> *We've had younger ones who've school refused, we've put loads of intervention in place…and then they've gone back in the school and they've been fine so it just depends, that early intervention is the key isn't it really?* (P16, Deputy Safeguarding Lead, Group Three)

Adapting the school context

Practitioners discussed various adjustments made for students with attendance problems, with reduced timetables and additional in-lesson support considered helpful. Supporting reintegration back into school after a period of non-attendance was considered important, for example by breaking learning into small chunks, providing virtual classrooms accessed from home, or reintegration packages provided by specialist teams. Groups Two and Three described settings within school that were used for those returning to school, focusing on the benefits of a calm environment:

> *This centre is used as a bit of a stop-gap as well… the geography of where it is, away from the main site, the sort of ambiance of the room as well, it's a very calm environment…not every school would have that, but we're lucky*. (P08, Assistant Principal, Group Two)

Teachers and/or support staff at all schools undertook home visits, which were considered beneficial in encouraging students back into school and getting to know the family better. Having a designated staff member or peer to meet the student at the start of each day and offer ongoing support, was described as a helpful strategy, but the personality and attitude of this person was believed to be key:

> *I think that kids also like that one-to-one, they can get that relationship going with somebody…I think that helps, if they know that they can come in and they've got a friendly greeting and not an angry miserable person who's fed up with them not being in the lesson*. (P14, Personalised Learning Assistant, Group Three)

Off-site alternative educational provision was considered an important intervention. P02 believed the greatest successes were when they had *set something up alternative, different…they've accessed their education elsewhere* (P02, SENCO, Group Two). The personalised learning environment of such provisions was considered particularly beneficial.

> *Our off-site provision is staffed by fantastic staff but they're not teachers and I think especially key stage four students, getting them taught by teaching staff, who have time to work one-to-one or two-to-one with the students is amazing*. (P16, Deputy Safeguarding Lead, Group Three)

All groups had experience of punitive interventions such as penalty notices, official school letters and threats of court action. Practitioners in Group Three were unanimously against this approach, believing that it *immediately creates a hostile environment* (P15, Personalised Learning Assistant, Group Three) and *normally doesn't work* (P14, Personalised Learning Assistant, Group Three). Groups One and Two, however, believed these approaches to sometimes be successful, while also recognising potential harms:

> *The prosecution side of things when it's an anxiety issue as opposed to a behaviour issue, I would say, makes it worse, it increases the anxiety and therefore makes it harder for them to come in*. (P09, Parent & Family Support Advisor, Group Two)

Providing emotional support

Practitioners believed poor resilience to be a key factor in students' school attendance problems, and discussed the importance of interventions aimed at building their resilience, confidence and self-esteem. Group One discussed plans for a Royal Marines course focused on building resilience

for *'those kind of kids who give up too easily'* (P01, Head of Key Stage Four, Group One). Poor mental health, particularly anxiety, was recognised as a contributory factor, and practitioners described supporting students with psychoeducation:

> *Explaining that they will feel those fight, flight symptoms and kind of really go into depth about that… and giving them strategies for when they are feeling that how to kind of bring that down and kind of help them to calm*. (P09, Parent & Family Support Advisor, Group Two)

Supportive interventions were considered especially important for vulnerable groups of students, such as those with special educational needs or who had already been absent for some time. Times of transition, such as moving from primary to secondary school, or returning after the summer break, were considered particularly high-risk, and practitioners described a range of interventions implemented by both teaching and support staff to assist students at these times, including providing extra emotional support, summer schools, home visits during the holidays, and one-to-one meetings:

> *It's a pretty detailed transition process isn't it, our Head of Year Seven goes out to every primary school and meets every student, we have treasure hunts don't we?* (P08, Assistant Principal, Group Two)

> *Yes we have them all up here of an evening when it's quiet individually*. (P07, SENCO, Group Two)

Practitioners in Group Three all placed high value on pastoral support and believed this to be a key intervention that they would like to see more of.

> *Can you think of the things that work the best to get them in, the positive?* (Interviewer)

> *Nurture*. (P13, Family Liaison Worker, Group Three)

> *Nurture, pastoral support*. (P16, Deputy Safeguarding Lead, Group Three)

> *Attention*. (P15, Personalised Learning Assistant, Group Three)

Attendance problems are a shared responsibility

Continuous parental involvement right from the outset was considered essential, and practitioners in both teaching and non-teaching roles encouraged this by spending time with parents and organising regular meetings or telephone conversations.

> *You've got to keep contacting that parent, keep letting them know how things are going, keep letting them know what the next stage is, and again that requires an enormous amount of resilience and a huge chunk of time on a daily basis…but it's what you have to do because it's got to be kept at the forefront hasn't it, that child's attendance and that child's opportunities*. (P08, Assistant Principal, Group Two)

> *I'd phone mum every day, is she coming in? She coming? I couldn't have left it for weeks and weeks, you couldn't, you can't do that*. (P15, Personalised Learning Assistant, Group Three)

Likewise, practitioners discussed the importance of supporting parents, for example by celebrating positive parenting, acknowledging when parents respond to attendance problems in a helpful way, and signposting to other services. Some believed parenting courses could be helpful, but others found it difficult to engage parents, preferring what P13 referred to as a trickle effect: *'like a parenting course style but just drip, drip through in different sort of sessions, not formal sessions'* (P13, Family Liaison Worker, Group Three). Practitioners recognised parents' own anxieties about school and believed in building strong school-family relationships:

> *Some kind of garden party or something to get the parents in…it is about trying to find the time to build relationships with those parents before they even get here*. (P07, SENCO, Group Two)

Support from mental health services, educational psychologists or other healthcare professionals was considered beneficial. Practitioners discussed the essential role of non-teaching, pastoral staff

in spotting the signs of problems, encouraging attendance and maintaining regular contact with students and parents. As P09 explained: *'If money was no object, I would have loads more support workers to make sure that there was somebody available all of the time to deal with those things'* (P09, Parent & Family Support Advisor, Group Two). Taking responsibility for their individual roles was considered important, while also learning from each other and working as a team to tackle school attendance problems:

> *There's a team thing though isn't it, so I can get them to you, and you can do your thing.* (P13, Family Liaison Worker, Group Three)

Discussion

Practitioners perceived school attendance problems to be resource intensive, requiring time, effort and money. Financial restrictions and funding cuts were reported to restrict the availability of external services, as well as limiting schools' ability to respond internally. Time delays in accessing support caused particular concern and were perceived to cause problems to escalate. School attendance problems were considered emotionally demanding, requiring resilience, and the cycle of poor attendance led practitioners to describe intense effort for small or short-term gains, causing concern about spending too much time supporting students with attendance problems, at the expense of other students. These concerns are not unique to school attendance problems, with previous research suggesting similar difficulties balancing the needs of a few students versus the rest of the class, for teachers working with students with Attention-Deficit/Hyperactivity Disorder (ADHD) (Richardson et al. 2015).

In line with previous suggestions in the literature, practitioners emphasised the importance of understanding the underlying causes for each student (Brand and O'Conner 2004; Elliott and Place 2012; Ingul and Nordahl 2013; Kearney 2008b; Thambirajah, Grandison, and De-Hayes 2008; Wimmer 2008), but they also found it difficult to understand the causes and expressed concern about getting it wrong. This is consistent with findings from a previous qualitative study, in which school health personnel discussed the challenges of identifying reasons for school refusal (Torrens Armstrong et al. 2011). Several practitioners, however, commented that school is rarely the cause of the problem, which is consistent with previous findings that school staff de-emphasise the role of school factors in favour of other factors, particularly family factors (Gren-Landell et al. 2015; Malcolm et al. 2003; Reid 2007). This is of interest since a range of school factors are associated with school attendance problems (Kearney 2008b; Wimmer 2008). Researchers have emphasised the potential of initiatives to provide a safe, supportive school environment and increase school connectedness in reducing attendance problems (Elliott and Place 2012; Wimmer 2008), and parents believe that supportive teaching staff are essential to overcoming the problem (Havik, Bru, and Ertesvåg 2014).

Practitioners described a range of interventions they had used for students with school attendance problems, many of which are recommended in the literature, including individualised education plans and timetable modifications, peer mentors, having a trusted staff member to meet the student at the start of the day, home visits, mental health support, building strong school-family relationships, and offering additional support during times of transition or when returning to school after a period of absence (Elliott and Place 2012; Havik, Bru, and Ertesvåg 2014; Kearney and Bensaheb 2006; Kearney and Graczyk 2014; Reid 2007; Wimmer 2008). Consistent with previous literature, early intervention at the first sign of attendance problems, and the ability to individualise interventions to each student, were considered key (Elliott and Place 2012; Kearney and Albano 2004; Kearney and Beasley 1994; Kearney and Graczyk 2014; Thambirajah, Grandison, and De-Hayes 2008).

While practitioners in Groups One and Two believed punitive approaches to sometimes be successful, those in Group Three favoured nurture and pastoral support. Evidence suggests that

penalties only improve attendance long-term for a small minority of students, and it has previously been proposed that punishment for school attendance problems should be avoided (Apter 2017). The opposing views reported in our study may reflect different job roles, since all practitioners in Group Three were employed in supportive or pastoral roles, whereas Groups One and Two included teaching staff whose views are likely to reflect their primary role as educators. In addition, School Three had higher rates of overall and persistent absence compared to Schools One and Two, and thus practitioners in Group Three may have greater experience with, and understanding of, school attendance problems.

Addressing mental health problems and promoting emotional resilience were considered important, which is consistent with a previous study in which low mood/depression and worry/anxiety/nervousness were reported by teachers as key contributors to absenteeism (Gren-Landell et al. 2015). These findings support recent calls for schools to help prevent mental health problems associated with school attendance problems by supporting families, encouraging self-care and building resilience (DoH (Department of Health) 2015). Consistent with previous literature, practitioners believed parent support and involvement, positive school-parent relationships and good communication to be essential to overcoming attendance problems (Havik, Bru, and Ertesvåg 2014; Kearney and Graczyk 2014; Wimmer 2008). Practitioners also described the vital role of school support staff in addressing attendance problems, and many described the best outcomes being achieved with collaborative working. Researchers have long recommended a team approach to school attendance problems, with students, school staff, parents, peers and health personnel all working together to address the problem (Brand and O'Conner 2004; Gren-Landell et al. 2015; Kearney 2008b; Kearney and Graczyk 2014; Wimmer 2008).

Limitations

We interviewed practitioners from a variety of job roles and with varying lengths of experience, which provided some diversity in our sample, providing a greater breadth of understanding. However, our opportunity sampling method may have led to homogeneity in other respects. For example, all participants worked with young people in mainstream state-funded academies and all expressed an interest in and knowledge of school attendance problems. We did not obtain the perspectives of educational practitioners exposed to, but unengaged with school attendance problems, or those working in special education schools.

For pragmatic reasons focus groups were conducted at the school-level, combining practitioners in different roles from each school. While ground rules were agreed at the start, it is possible that the differences in status, job role, or experience made some participants less able to express their views. Focus groups were single-category and, consistent with good practice, three were conducted. For practical reasons, theoretical saturation was not sought. Second-stage sampling (convening additional groups involving participants with different characteristics) was carefully considered at the end of analyses, but was rejected because the data obtained was judged sufficiently rich to address the research questions.

Implications

Our findings show that educational practitioners support a team approach to attendance problems, involving the student, their family, teachers and support staff. School-based initiatives to increase parental involvement and improve parent-school collaboration could be a key step. Early intervention at the first sign of attendance problems should be encouraged. Educational practitioners should work with students to encourage emotional resilience, and provide mental health support where necessary.

Punitive approaches were supported by some practitioners in our study, despite evidence suggesting they are largely ineffective. Schools should be encouraged to focus on creating a

safe, welcoming and supportive school environment, rewarding good attendance rather than punishing poor attendance (Apter 2017; Wimmer 2008). Our findings suggest that educational practitioners should be encouraged to recognise the potential role of school factors in attendance problems, and not underestimate the influence of factors that may be under their control. Finally, the emotional challenges for school staff supporting children with attendance problems should be recognised, and appropriate support provided.

Conclusion

Our findings highlight the challenge of school attendance problems for educational practitioners in terms of their limited resources to adequately support students, the emotional impact for practitioners, and difficulty in understanding the causes. Nevertheless, when schools are able to implement individualised interventions at the first sign of attendance problems, and take a team-based approach involving students, parents, teachers and dedicated pastoral staff, this can lead to positive outcomes.

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